

THIS WEEK IN THE IRON AGE

Vol. 158, No. 1

July 4, 1946

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Indexed in the Industrial Arts Index. Published every Thursday. Subscription Price North America, South America and U. S. Possessions, \$8; Foreign, \$15 per year. Single Copy, 35 cents. Annual Review Number \$2.00.

Cable Address, "Ironage" N. Y.

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Pro Bono Publico

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Pro Bono Publico

THE Greeks may have had a word for it but the Latins had them beat. For they had three words that expressed the most important principle of democracy. They were *pro bono publico*, meaning, "in behalf of the public."

These three words could well be framed as a motto and hung in the office of the White House, blown up into a gigantic mural and emblazoned on the walls of the House and the Senate and pasted in the hats of every statesman, labor leader and bureau head in America. But what good that would do, unless the spirit of the word entered the hearts of men and bore fruit, is something else again.

Paul Hoffman, head of the Committee for Economic Development, phrased this thought in modern English as follows: "What is good for everybody is good for business." And one of the reasons, perhaps the principal one, for the outstanding success of the CED is that this organization has let this slogan enter into its heart and inspire its action, which has been for the welfare of the public as contrasted with selfish class or sectional interest.

Naturally, it is *pro bono publico* to keep business good because closed factories and curtailed payrolls hurt everybody. But the best way to keep business good, as most of us know, though some won't admit, is to see to it that whatever prosperity we attain is distributed as broadly as possible.

You have heard and read a great deal about the broadened distribution of purchasing power, so that more people can buy more things and more workers can be employed in making them. Personally, I would change the word from "purchasing" to "earning" power. I do not think that purchasing power is healthy for an individual, a company or a country unless it is earned purchasing power. The handouts that keep some of our GI's from accepting work because \$20 per for 52 weeks enables them to dodge it is not *pro bono publico*.

It's not good for the United States to have an excess of purchasing power over earning power as represented by the difference between annual expenditures from debt and from taxes. The boys who run the country and control expenditures are likely to overlook the fact that the dollars they are spending or giving away have not been earned and that easy go now will mean hard come tomorrow.

It's not good for a company to acquire unearned profits, or to phrase it otherwise, unreasonable profits. I think, however, from a perusal of first-quarter earning statements, that between the tax collectors and the union dues collectors there will be little danger of that.

Certainly it is not *pro bono publico* for certain powerful minority labor groups to increase their purchasing power beyond their actual earning power by wielding the strike club. And whenever a wage rise necessitates a price rise that is what has happened. The white collar people, the unorganized workers, the people who have retired on savings or investments and the life insurance policy holders in such cases are called upon to diminish their earning power, present and past, in real dollars in order to bolster up the purchasing power of the boys who find demanding easier than earning.

Phrase it as you will, either in terms of the Latin expression, the Golden Rule or Paul Hoffman's modern English, the thought is one that we could all well live by so as to make living better for all.

J. H. Van Deventer



Special duty trucks gather steel samples for the laboratory.



A truck is unloaded at the laboratory, and immediately starts another round trip.



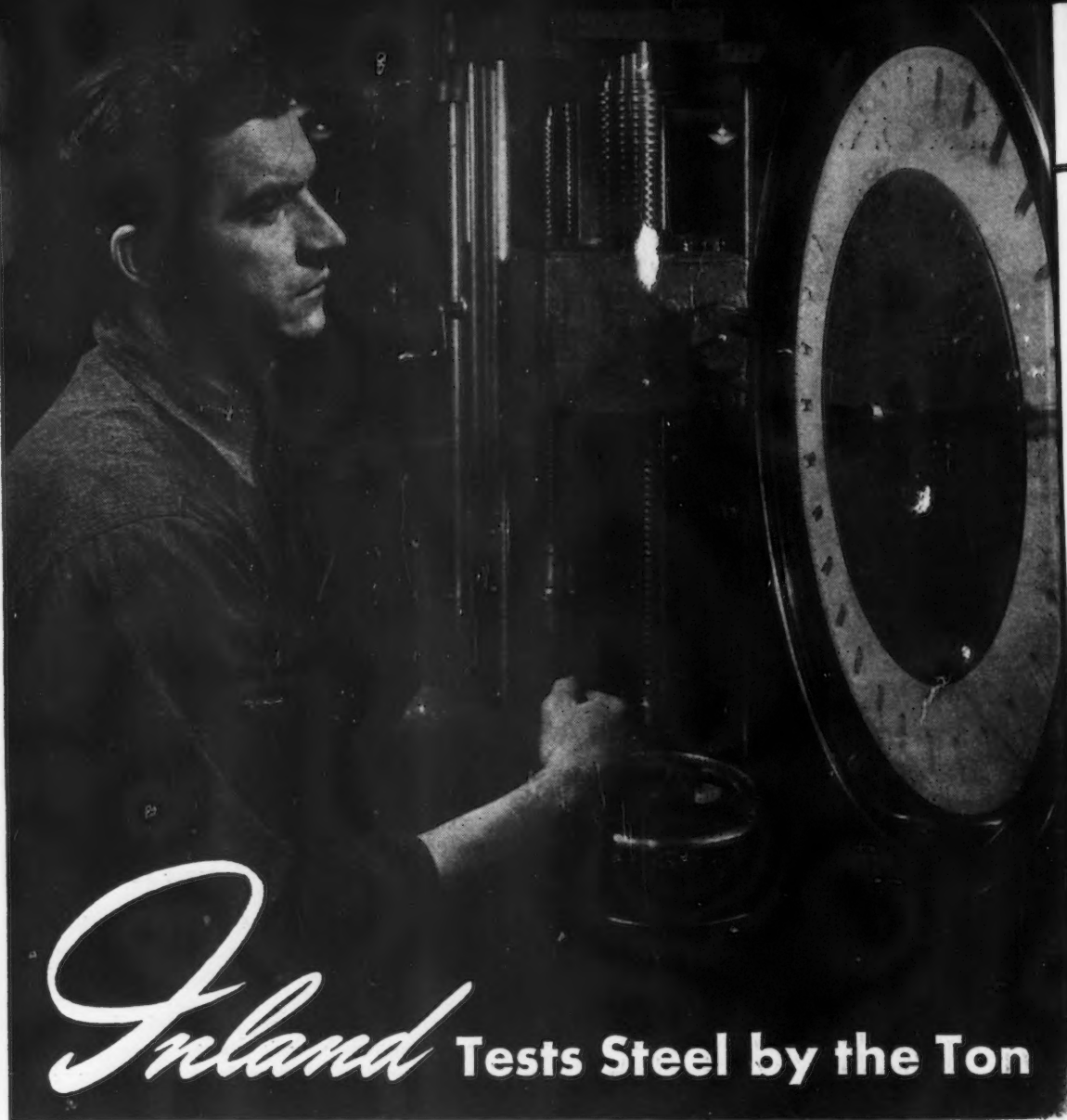
Plate samples are punched to rough form, then milled. Others are sawed, turned, drilled, etc., as required.



Many samples undergo rigid chemical tests.



Metallurgical tests are extremely important for quality control.



Inland Tests Steel by the Ton

Operator determining physical properties on one of the many tensile testing machines in the Inland laboratory.

Darting from mill building to mill building—many times a day, and at night—are Inland trucks on special duty, a duty of vital interest to every user of Inland steel.

They are the sample trucks which rush samples of Inland products to the main laboratory where all required tests must be completed, reported and checked against specifications before steel is shipped.

Samples are gathered for the laboratory at semi-finishing mills—pieces from billets, slabs, etc., that will be

tested before the steel is rolled into final form. Also collected are samples of finished products. Depending upon requirements, every piece of steel delivered to the Inland laboratory undergoes rigid physical, chemical, and metallurgical tests. Many of these tests are special developments by Inland—tests that are fast and extremely accurate.

Yes, Inland daily tests tons and tons of steel to assure every customer that his order will measure up to every requirement.



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- ▶ For the lack of cars, 45,000 kegs of nails are sitting in a midwest plant awaiting shipment. The shortage in cars is also seriously hampering deliveries of tinplate in that area.
- ▶ There is a definite trend away from machining. One large GM unit has decreased its carbide tool machining operations from 225 to 37. Castings, close tolerance forgings, stampings and weldments are being substituted wherever possible.
- ▶ Approval of the sale of \$65 million in scrambled facilities to Carnegie-Illinois is predicted based on reasoning that they will not increase rated capacity of U. S. Steel Corp.
- ▶ The Navy's remarkable rocket engine, first publicized in May has been flown in the new Curtis XF15C-1 at a reputed speed of 597 mph, according to the British magazine The Aeroplane. However, the Navy Dept's aviation section will neither deny or confirm the existence of such a plane.
- ▶ General upward revision in prices on magnesium rolled and extruded products is expected; a few prices may be dropped; ingots are not expected to change.
- ▶ Army Ordnance plans to import equipment used by Germans for cold extrusion of steel shapes. It is claimed that steel cartridge cases can be cold extruded.
- ▶ Director Arthur Paul of the Office of International Trade estimates foreign requirements of American commodities at \$9.239 billion including \$3.419 billion of machinery and vehicles and \$1.042 billion of metals and manufactures.
- ▶ Jet engines will not replace conventional reciprocating power units for 5 to 10 yr. says Air Commodore F. J. Whittle, the RAF officer largely responsible for introduction of the jet engine. He states that compressors, combustion methods and materials will determine progress in development. Meanwhile, Navy Dept. continues to push reciprocating engine because jets appear unsuited to carrier use.
- ▶ Sears, Roebuck 1946 fall and winter catalogue is now in the mails, 37 pct larger than last year's issue but minus the pages advertising refrigerators, washing machines, radios and sewing machines.
- ▶ A patent has been issued covering an electroplating process by which chromium and nickel, chromium, nickel and iron, and chromium and iron may be applied to ordinary low or high carbon strip steel, yielding a stainless clad product of high quality. After plating, the material is subjected to alternate heat treatment, cold rolling, and heat treatment. The inventor claims the process will definitely cut the cost of producing stainless clad.
- ▶ New move to enable scientists to renew their studies and to establish close cooperation between industry and the university laboratories, has been inaugurated by Monsanto Chemical. Four industrial scientists will be awarded leaves of absence at full salary for an academic year of study at the university of their choice.
- ▶ Best delivery a big buyer could get this week on two transformers was 500 days. There is nothing about them that calls for anything but the ordinary shelf variety, yet even their purchase in the used equipment market proved unusually difficult.
- ▶ Merchant wire production in most lines would be more than sufficient to meet needs if demand were on a prewar basis.
- ▶ Bureau of Mines investigation has established the fact that there are no domestic lignite or subbituminous coals that offer coking possibilities since they tend to break down and slag in the ovens.
- ▶ New approach to the problem of fatigue failure is a theory based on effects of the three-dimensional stress system acting on an elementary subsurface particle to produce shearing stresses and strains.
- ▶ German forging practice lagged 25 yr behind that of United States, postwar investigations reveal.
- ▶ The Brassert-designed, British-built steel plant in Turkey has proved disappointing. Originally laid out to produce 150,000 tons a year, its maximum annual output thus far has been 50,000 tons. Inability to hit rated output is attributed to a number of factors, principally to lack of energy and enterprise on the part of the nationalized management of the plant.
- ▶ American exporters, now feeding shoddy goods to the Belgian market are damaging this nation's reputation for high quality manufactured goods.
- ▶ A British firm is getting into production on a French-designed light car with many parts of cast aluminum alloys. U.K. motor makers are interested and a number of large producers are rushing prototype cars using light alloys in quantity. One company, Standard, already has such a vehicle on the road.

Decarburization

In Highly Stressed Steels

By P. A. HAYTHORNE

Research Engineer,
Lockheed Aircraft Corp.,
Burbank, Calif.

An evaluation of decarburization and its effects on the properties of heat treated, highly stressed aircraft steels is made in this investigation. The author also describes a new technique for accurate determination of surface carbon depletion, in view of the inadequacy of present methods.

DECARBURIZATION, defined as the loss of carbon from surfaces of iron-base alloys as the result of heating in media which react with the carbon, has been the subject of extensive study by many investigators. Results of their work have been published and much has been done to identify causes and suggest preventive and curative methods of treatment. A few of the more pertinent facts and observations relating to the phenomenon of decarburization itself are summarized in this article.

In considering the properties of decarburized material, it is evident that carbon-depleted surfaces may be with or without effect on the service life of a part depending upon conditions of loading to which

For other articles dealing with decarburization in steel see THE IRON AGE, Jan. 28, 1943, Feb. 4, 1943, Apr. 13, 1944, Oct. 18, Oct. 25, and Nov. 29, 1945.

such components may be subjected, and to the extent of decarburization.

It has been stated that the presence of decarburized layers has a deleterious effect on the endurance limit of steel components subjected to fatigue stresses, and on the yield and tensile strength of normalized or quenched and tempered parts, but that actual decreases in notch sensitivity have been shown in the presence of approximately 0.002 in. decarburization at the root of sharp notches in tensile specimens heat treated to a strength of 200,000 psi. This improvement is ascribed to relief of notch embrittling effects prevalent in high strength steels.

The amount of decarburization which will occur may be controlled by a number of variables, as the chemical composition of the alloy, atmosphere and time at elevated temperatures of working and heat treating. Atmospheres which contain oxygen, carbon dioxide or water vapor, as well as those containing nitrogen or hydrogen in the presence of water vapor, are strongly decarburizing. Treatment of parts to which scale is adherent has a decarburizing effect, and the absence of scale or presence of a bright surface serves as no valid indication that processing, even in controlled atmospheres, has prevented surface impoverishment of carbon.

TABLE I
Chemical Analyses of Specimens Tested

Specimens Tested	C	Mn	P	S	Si	Cr	Ni	Mo	
0.250 in. diam round.....	0.30	0.87	0.020	0.008	0.25	0.53	0.49	0.25	(NE 8630)
0.500 in. diam round.....	0.30	0.85	0.012	0.014	0.29	0.53	0.47	0.25	(NE 8630)
0.750 in. diam round.....	0.33	0.87	0.016	0.008	0.28	0.56	0.57	0.24	(NE 8630)
0.125 in. plate.....	0.29	0.86	0.025	0.008	0.24	0.56	0.54	0.23	(NE 8630)
0.250 in. plate.....	0.29	0.65	0.028	0.014	0.23	1.00	0.07	0.17	(SAE 4130)
1 in. OD x 0.125 in. wall tubing.....	0.33	0.55	0.020	0.026	0.25	1.05	0.05	0.25	(SAE 4130)
½ in. OD x 0.031 in. wall tubing.....	0.29	0.74	0.019	0.026	0.18	0.54	0.58	0.23	(NE 8630)

In the production of steel shapes it has been found that general practice cannot at present be reasonably modified to employ protective atmospheres during each step necessary for processing at elevated temperatures. Therefore, zones of decarburization occur on all "mill" surfaces including the inner surface of seamless tubing. The extent of "mill" decarburization may be partially controlled by reduction of processing times at elevated temperatures and it may be logically anticipated that improved production methods may limit this condition still further.

However, the problem of decarburization exists, and it remains to establish a suitable method to determine the true extent of decarburization effects, to evaluate these, and to recommend measures to render them ineffectual.

In the past, several means to detect depth of decarburized layers have been: (1) Microscopic examination (with variations), (2) chemical analyses of consecutive cuts below surface, (3) hardness tests of taper-ground specimens, (4) weight change measurements, (5) measurements of magnetic, thermal or elastic properties, (6) spark testing, and (7) file testing.

Of these methods it has appeared that hardness tests have been largely unsatisfactory due to discrepancies resulting from the nature of the test; weight change measurements have yielded satisfactorily accurate results; microscopic examination has often been shown deficient by minimizing the true extent of decarburization, and although sectional micro-hardness has been suggested, the literature contains very little by way of illustrated results.

With a history of many critically stressed aircraft parts whose partial or complete failure has been ascribed to decarburization (whether justifiably or not), it has become desirable to evaluate decarburization occurring in as-received material or heat-treated components, to establish methods for its accurate measurement and to suggest means to minimize its effects by processing or design.

Specimens for use in the present study were prepared from round bars, plates, and tubing of analyses approximating that of NE 8630 or SAE 4130 steel, the most commonly employed aircraft steels for highly stressed assemblies.

Chemical analyses of the various specimens are shown in table I.

Controlled amounts of decarburization were produced by treatment in a semimuffle electric furnace with no attempt to apply protective atmosphere. These treatments were conducted at normal austenitizing temperatures for the given steels (1600°F) and specimens were held for periods of 1 and 6 hr before cooling or quenching. These soaking times were selected in order to intentionally produce decarburization in widely varying degrees, i.e. a relatively insignificant (though measurable) amount, which may normally be considered excessive.

Decarburization specimens, finish machined on all exposed surfaces prior to treatment were (a) air cooled, (b) oil quenched and tempered at 800°F, and (c) oil quenched and tempered at 1100°F.

Control specimens (for comparative purposes) were rough machined, heat treated along with all decarburization samples, and finish machined to remove all traces of possible decarburization.

Tubing control specimens could not reasonably be

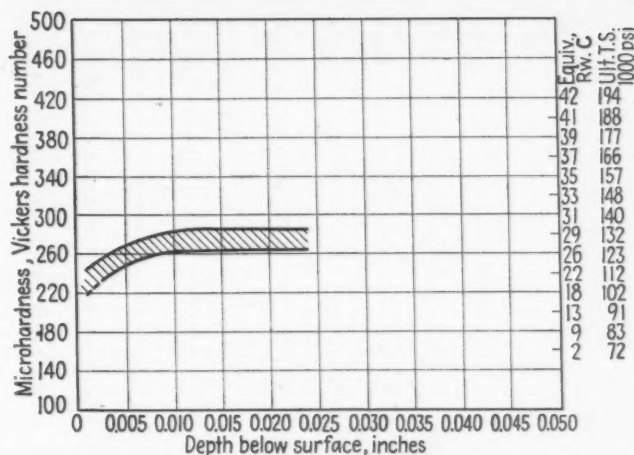
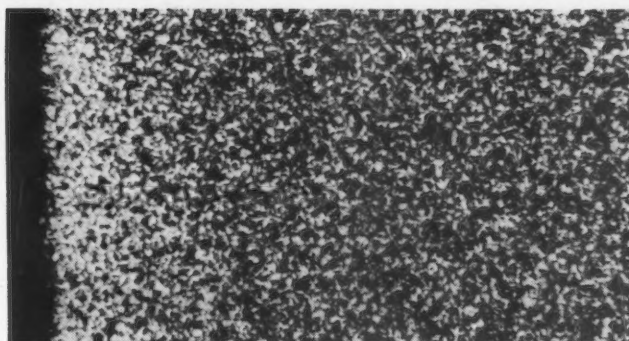


FIG. 1—0.500 in. diam round bar specimen, NE 8630. Austenitized for 1 hr at 1600°F, air cooled. 125X.

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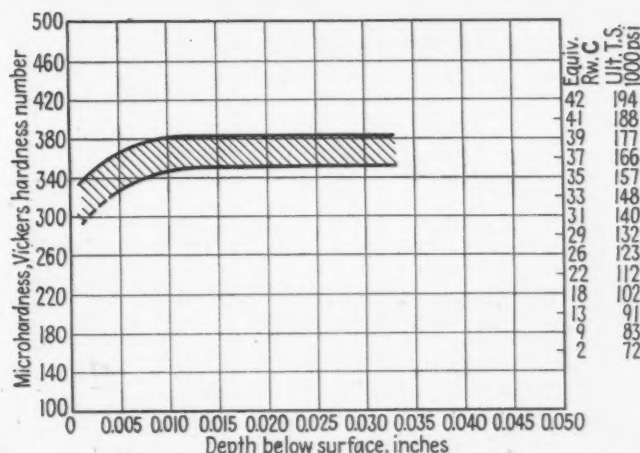
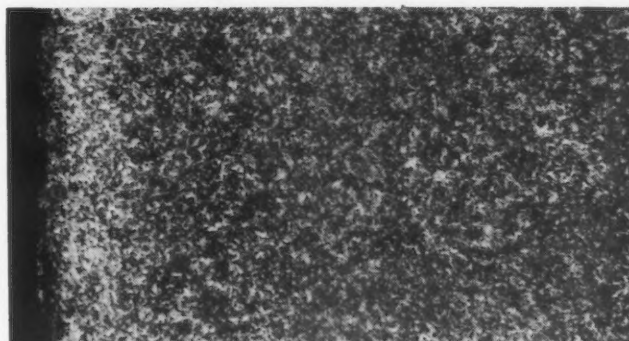


FIG. 2—0.500 in. diam round bar specimen, NE 8630. Austenitized for 1 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

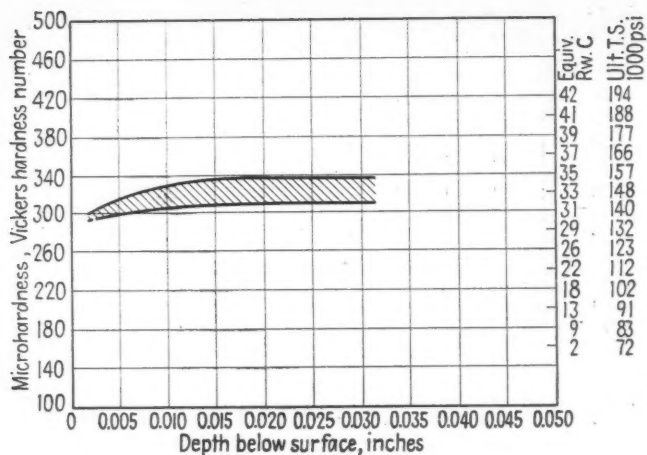
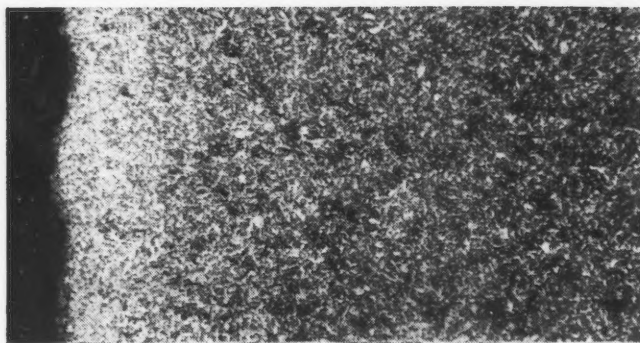


FIG. 3—0.500 in. diam round bar specimen, NE 8630. Austenitized for 1 hr at 1600°F, oil quenched, tempered 1 hr at 1100°F. 125X.

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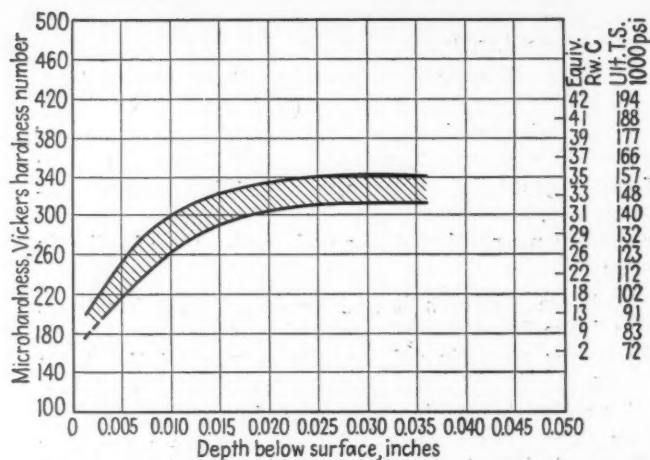
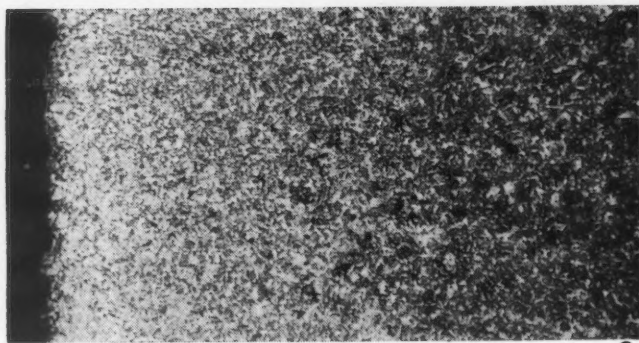


FIG. 5—0.500 in. diam round bar specimen, NE 8630. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

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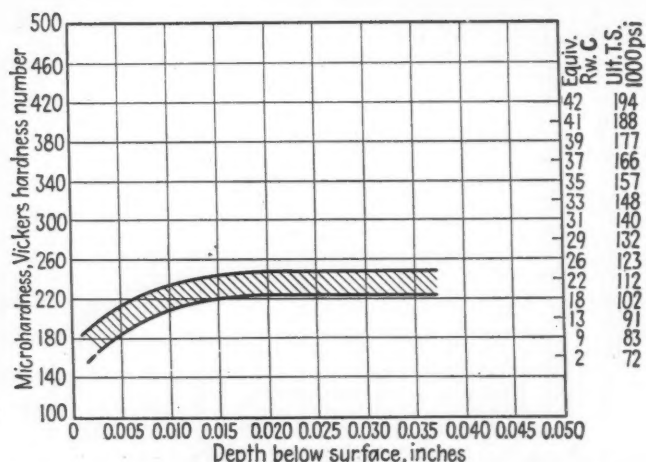
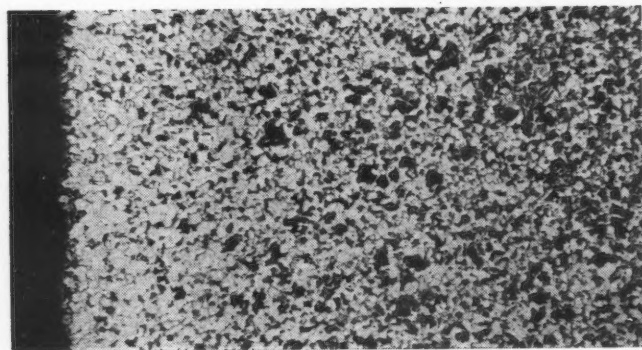


FIG. 4—0.500 in. diam round bar specimen, NE 8630. Austenitized 6 hr at 1600°F, air cooled, 125X.

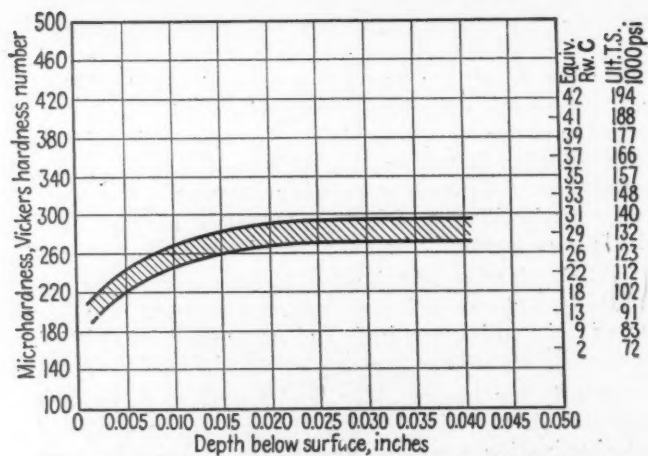
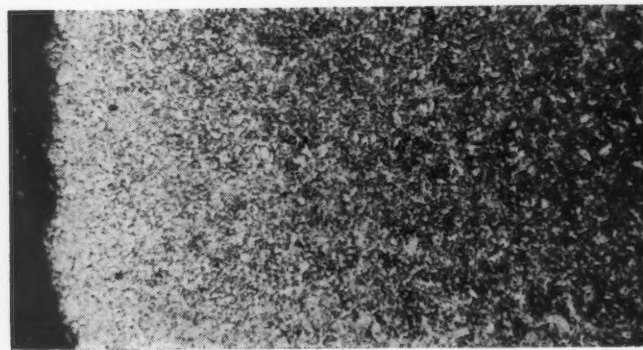


FIG. 6—0.500 in. diam round bar specimen, NE 8630. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 1100°F. 125X.

prepared in this manner and therefore these specimens show the effects of decarburization in the as received material in addition to negligibly slight amounts occurring as a result of short interval heat treatment. It is believed, however, that satisfactory comparisons may be made between these and test specimens treated for substantially longer periods of time (1 and 6 hr).

Following complete preparation and treatment of specimens, tensile tests were conducted to establish the effects of the various treatments on the strength of decarburized specimens at different hardness levels. Results of these tests are tabulated in table II.

Although several inconsistencies appear in the results, these are attributed to deviations in physical test data which often exceed the variations in the effects of short period decarburization. An additional contributing factor may be the incomplete solution of carbide in heavy sections treated for only 1 hr.

Despite apparent discrepancies, however, the following generalized conclusions may justifiably be made from physical test results: (1) The loss of tensile strength due to decarburization becomes of increasing significance as strength levels are raised; (2) short period (1 hr) treatment produces no consistently appreciable loss of tensile strength, and (3) severe impairment of tensile strength occurs as a result of 6-hr treatments, and as would be expected, the average loss of strength (at 3 levels of hardness) is most pronounced in parts of thin section where more surface in relation to section thickness is available for decarburization, that is 1/2-in. tubing, 1-in. tubing, 1/4-in. bar and thin plates.

As a next logical step in establishing the extent of decarburization, microsectional samples were prepared from each of the tensile specimens. These

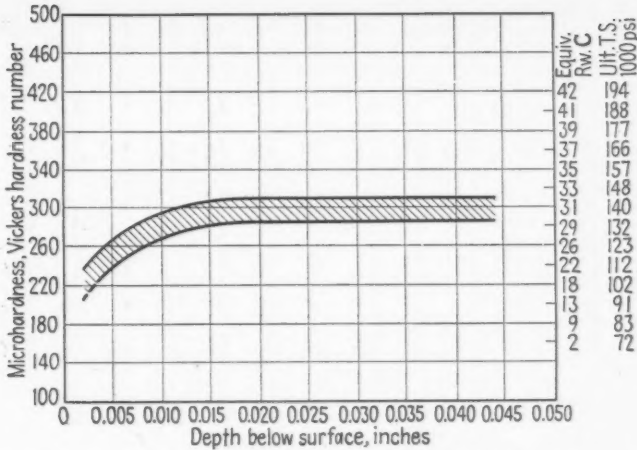
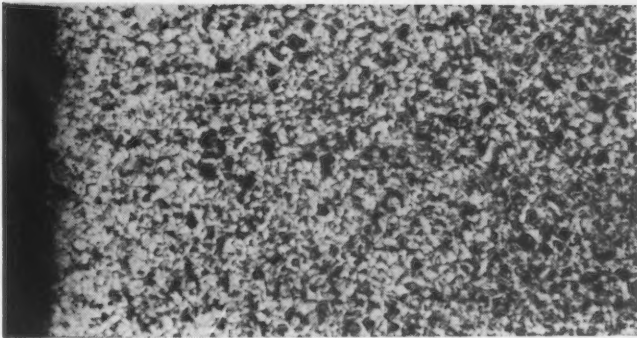


FIG. 7—0.750 in. diam round bar specimen, NE 8630. Austenitized 6 hr at 1600°F, air cooled. 125X.

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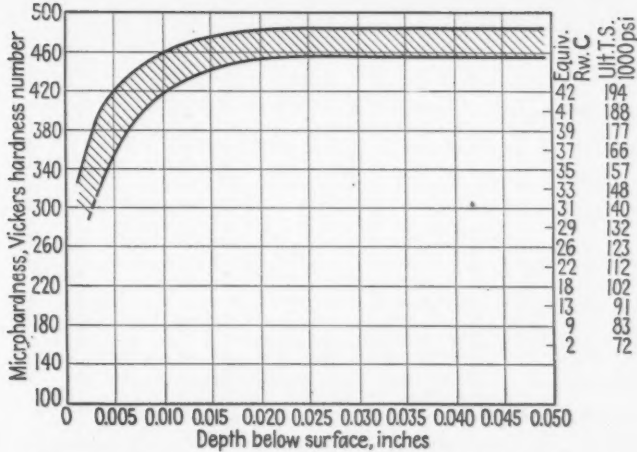
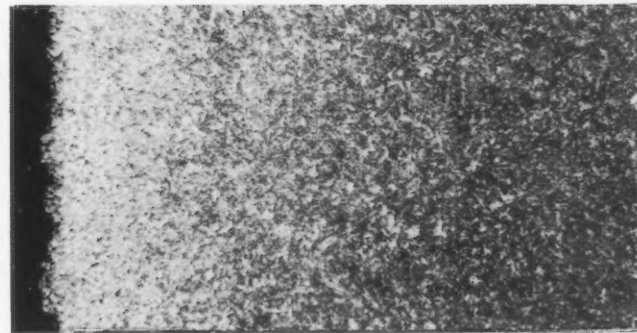


FIG. 8—0.750 in. diam round bar specimen, NE 8630. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

TABLE II

Effects of Various Heat Treatments on Strength Properties

Specimen Description	Ultimate Tensile Strength, Psi		
	Control*	1 hr	6 hr
1/4-in. diam Bar:			
Air Cooled.....	152,000	145,000	145,000
Tempered at 1100° F.....		157,000	145,000
Tempered at 800° F.....	198,000	199,000	198,000
1/2-in. diam Bar:			
Air Cooled.....	103,000	108,000	104,000
Tempered at 1100° F.....	140,000	138,000	133,000
Tempered at 800° F.....	177,000	172,000	157,000
3/4-in. diam Bar:			
Air Cooled.....	117,000	118,000	116,000
Tempered at 1100° F.....	143,000	145,000	143,000
Tempered at 800° F.....	184,000	181,000	178,000
1/8-in. Plate:			
Air Cooled.....	122,000	113,000	104,000
Tempered at 1100° F.....	140,000	142,000	132,000
Tempered at 800° F.....	183,000	179,000	141,000
1/4-in. Plate:			
Air Cooled.....	128,000	118,000	115,000
Tempered at 1100° F.....	151,000	156,000	139,000
Tempered at 800° F.....	190,000	197,000	159,000
1/2-in. OD x 0.031 in. Wall Tubing:			
Air Cooled.....	112,000	102,500	75,500
Tempered at 1100° F.....	133,000	131,000	103,000
Tempered at 800° F.....	168,000	163,000	124,000
1-in. OD x 0.125 in. Wall Tubing:			
Air Cooled.....	97,000	107,000	94,000
Tempered at 1100° F.....	143,000	144,000	132,000
Tempered at 800° F.....	191,000	192,000	169,000

* Decarburization removed by machining.

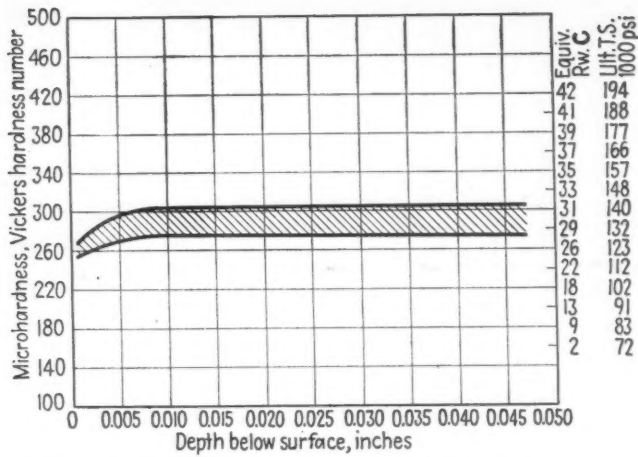
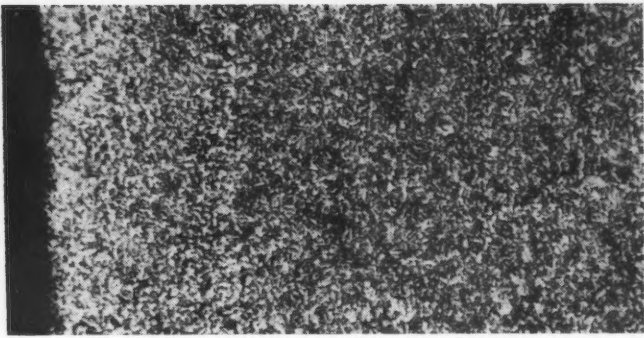


FIG. 9—0.125 in. plate specimen, NE 8630. Austenitized 1 hr at 1600°F, air cooled. 125X.

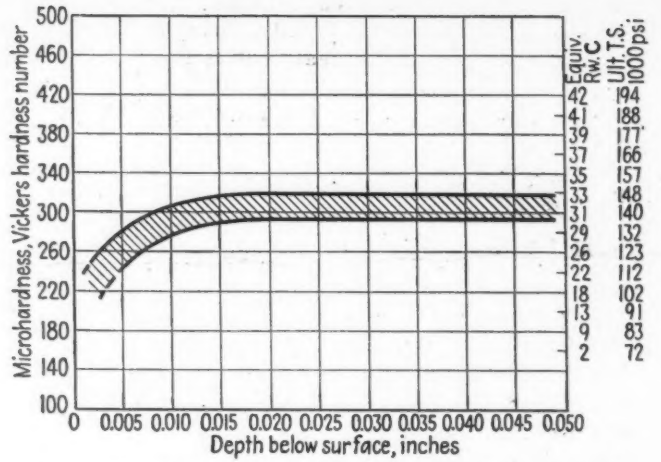
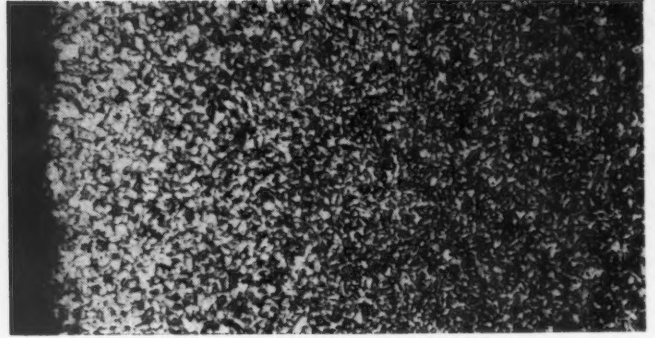


FIG. 11—0.125 in. plate specimen, NE 8630. Austenitized 6 hr at 1600°F, air cooled. 125X.

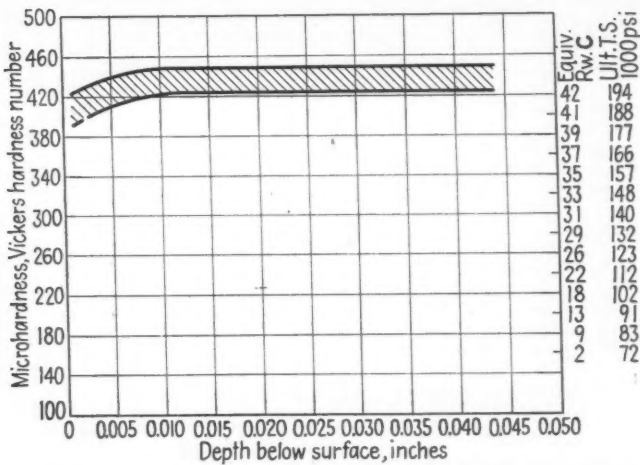
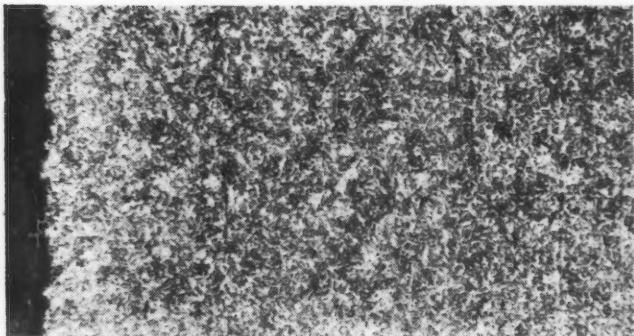


FIG. 10—0.125 in. plate specimen, NE 8630. Austenitized 1 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

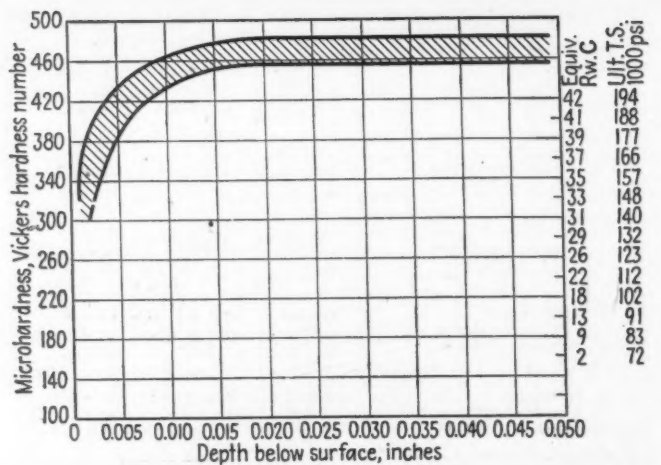
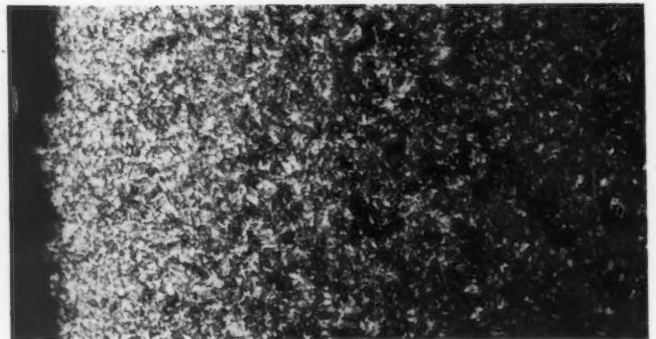


FIG. 12—0.125 in. plate specimen, NE 8630. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

were taken from areas in proximity to points of fracture but enough removed to avoid regions where necking down had occurred. All sections were examined and photomicrographed at 125X to illustrate characteristics of decarburized areas.

In addition, sectional microhardness values were obtained for all specimens to indicate accurately the depth to which carbon depleted surface regions extend. Curves which plot the sectional hardness are shown in the figures wherein the micrographs (to scale of hardness distribution curves) present visual aspects of decarburized zones. Specimens which are represented by illustrations and hardness traverse were selected as being generally adequate to indicate the results of this study, and a brief description of each specimen and its treatment is given with each figure. It is emphasized that although hardness versus ultimate tensile strength relationships are, as normally expected, approximate only, losses of strength may be more readily appreciated by such conversions.

It will be noted in figs. 1 to 26 that microhardness curves are shown as bands. These bands show the normal spread of microhardness values obtained in structures which are comprised of heterogeneous constituents.

Although the attached figures are largely self-explanatory, a number of generalized observations are offered by way of description.

In comparing the effects of 1 and 6-hr treatments (figs. 1 to 6) at different strength levels, relatively slight losses of surface hardness in specimens treated for 1 hr appear negligible, while the 6-hr treatment has actually resulted in appreciable reduction of core strength as well due to diffusion of carbon to surfaces. In addition, it may be seen that surface hardness in 6-hr specimens falls considerably below that of 1-hr specimens.

Figs. 7 and 8 show $\frac{3}{4}$ in. diam round bars soaked for 6 hr at 1600°F, normalized, and quenched and tempered respectively. The relation between microhardness traverse and visually apparent characteristics of decarburization can clearly be seen, and difficulties in evaluating decarburization by microscope may be readily appreciated.

Figs. 9, 10, 11 and 12 illustrate comparisons between 1 and 6-hr treatments of NE 8630, 0.125-in. plate, in the normalized and heat treated conditions. The same general comparisons are made for 0.250-in. SAE 4130 plate in figs. 13, 14, 15 and 16 where the effects of long period soaking are quite visible in microstructure.

Decarburization existing in surfaces (both OD and ID) of as received steel tubing of NE 8630 analysis is indicated graphically in figs. 17 and 18. As a result of atmosphere control and short time-at-temperature to produce core properties comparable to heavily decarburized specimens (figs. 19 and 20), the depth of low carbon zones has not been noticeably increased and, therefore, the decarburization shown may for all practical purposes be considered to exist in the tubing as received. It will be noted that further treatment (6 hr at 1600°F) produces no appreciably greater loss of carbon or strength, and this may be attributed to slight "equalizing" carbon diffusion, to more complete solution, and/or to the modification of structure in tubing treated for 6 hr.

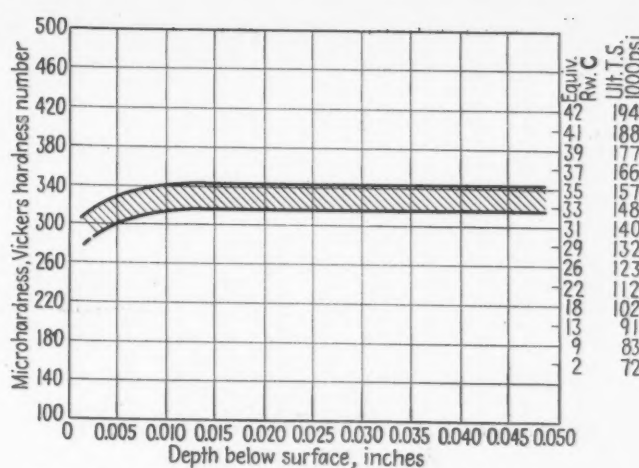
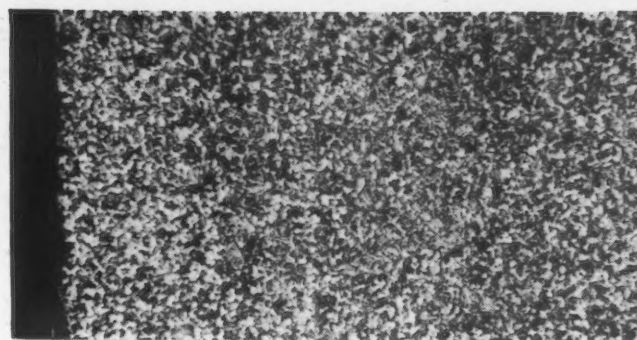


FIG. 13—0.250 in. plate specimen, SAE 4130. Austenitized 1 hr at 1600°F, air cooled. 125X.

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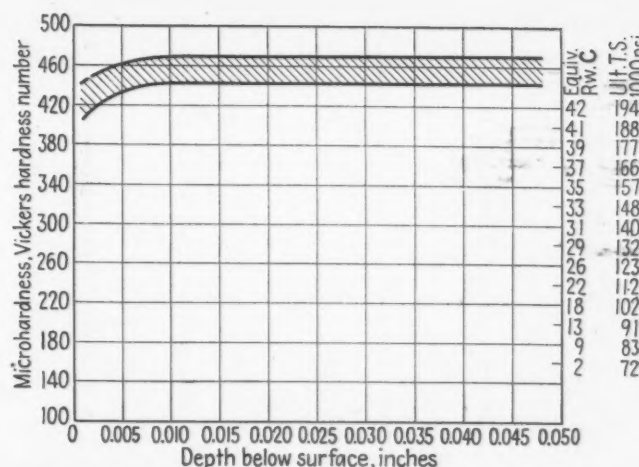
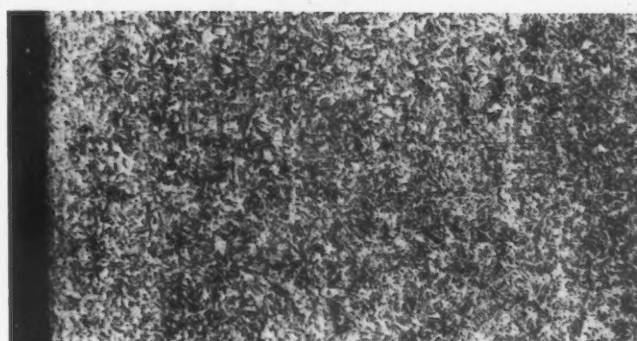


FIG. 14—0.250 in. plate specimen, SAE 4130. Austenitized 1 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

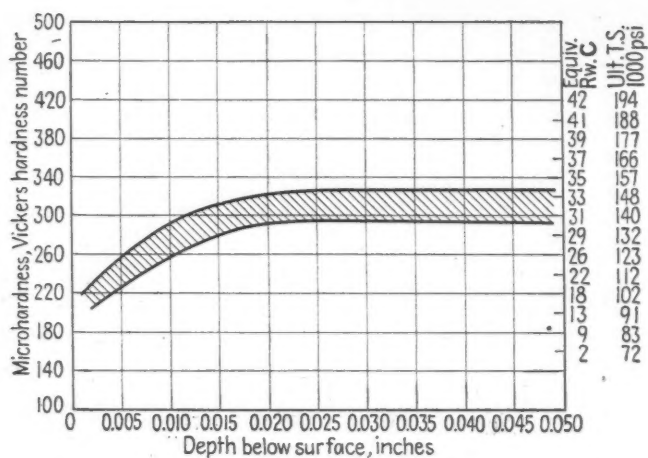
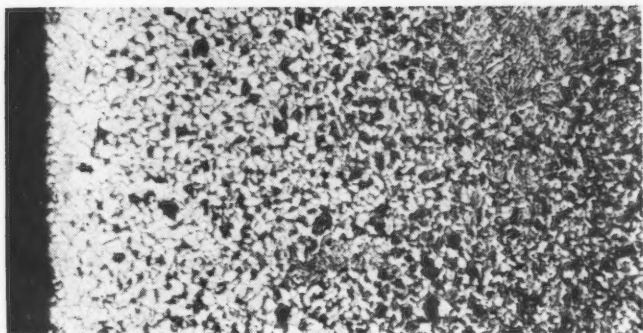


FIG. 15—0.250 in. plate specimen, SAE 4130. Austenitized 6 hr at 1600°F, air cooled. 125X.

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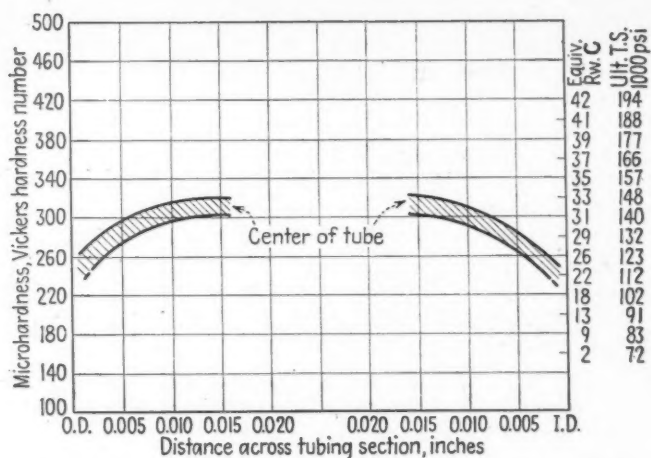
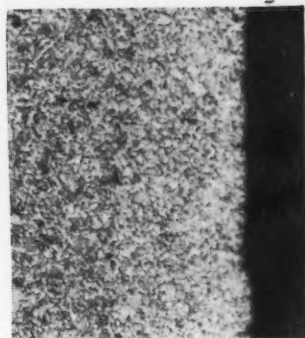
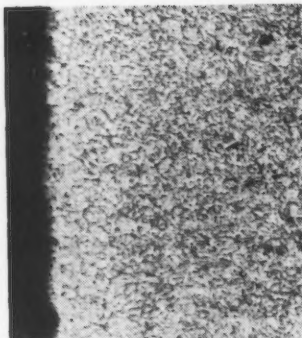


FIG. 17—0.500 in. OD x 0.031 in. wall tubing specimen, NE 8630. Austenitized 15 min at 1600°F in semicontrolled atmosphere, air cooled. 125X.

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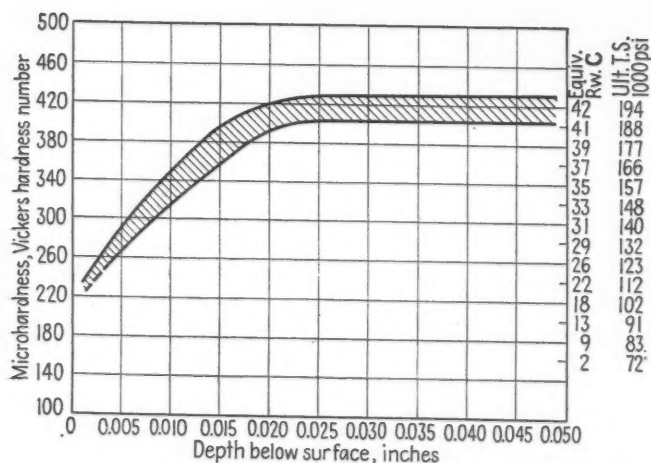
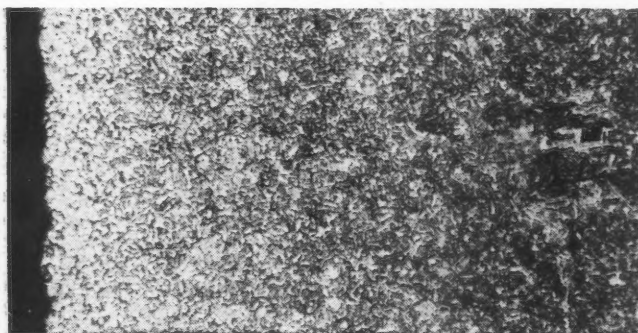


FIG. 16—0.250 in. plate specimen, SAE 4130. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

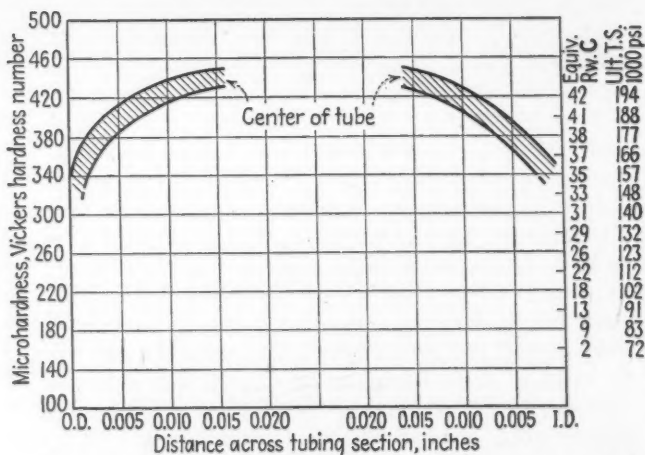
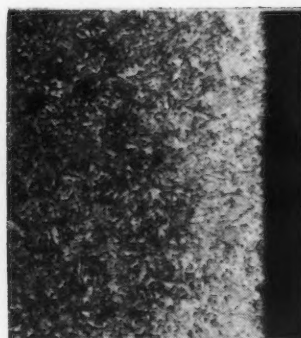
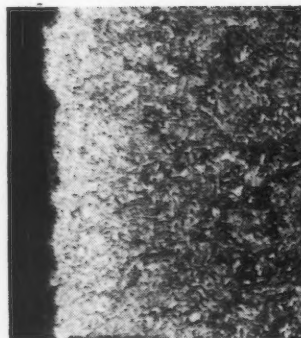


FIG. 18—0.500 in. OD x 0.031 in. wall tubing specimen, NE 8630. Austenitized 15 min at 1600°F in semicontrolled atmosphere, oil quenched, tempered 1 hr at 800°F. 125X.

In the main, the foregoing figures serve to indicate that as received tubing material is not free of decarburized layers and is rather in poor condition for development of satisfactory properties by subsequent heat treatment.

Figs. 21 to 26 inclusive illustrate the decarburization in as received 1.00 x 0.125-in. wall, SAE 4130 tubing and the progressive deterioration of surface layers with increasing time at austenitizing temperature. Again, the true extent of carbon depletion is not apparent from the micrographs, but is emphasized by sectional microhardness distribution. Obviously, the decarburization shown in fig. 26 for both inside and outside of tubing would render this material completely unsatisfactory for critically loaded assemblies inasmuch as approximately 0.040 in. of entire tubing section shows the effects of strength loss, and therefore only 68 pct of the material has attained maximum core hardness.

In general, the results of the present investigation have served to emphasize that decarburization may constitute a serious hazard to the serviceability of highly-stressed steel aircraft parts, due to excessive loss of tensile strength, and therefore the presence of decarburized surfaces is a factor which merits consideration in the acceptance, design and treatment of such components.

It has been shown that the most deleterious effects of surface carbon depletion on the impairment of mechanical properties occur in thin sections, i.e. small diameter bars, light gauge plates and sheet, and thin walled tubing; and that a given amount of decarburization becomes of increasing significance with increase in strength level to which parts are heat treated.

It is indicated that tubing material is appreciably more prone to loss of strength by virtue of its geometry, that is, the relation of exposed surface to effective section, as well as to the further deterioration of surfaces previously decarburized during the fabrication of tube shapes. In addition, this "mill decarburization" (in as received material) has been found to be extremely serious.

In noting that low carbon surface layers extend to greater depths than generally believed (pointing to microscopic examination in particular as being a quite inadequate method) it becomes increasingly apparent that normal inspection methods of testing for hardness may yield erroneously low values, on the basis of which heat-treated components may be subject to reheat treatment, resultant additional decarburization, and often inordinately hard (and brittle) core material required to compensate for softness of decarburized surfaces on which hardness readings may be taken.

In view of the foregoing observations, efforts to control decarburization and to minimize its effects in heat treated aircraft components seem completely justified. Toward this end inspection methods should be adopted to insure the acceptance of only those materials in which the initial amount of decarburization (in as received condition) is of no appreciable significance in view of subsequent processing involving its removal or because of the nature of fabricated parts. Particular care should be exercised in the acceptance and use of tubing materials, the decarburized surfaces (inside and outside) of which will not be removed by machining operations prior to service. The establishment of standard acceptance

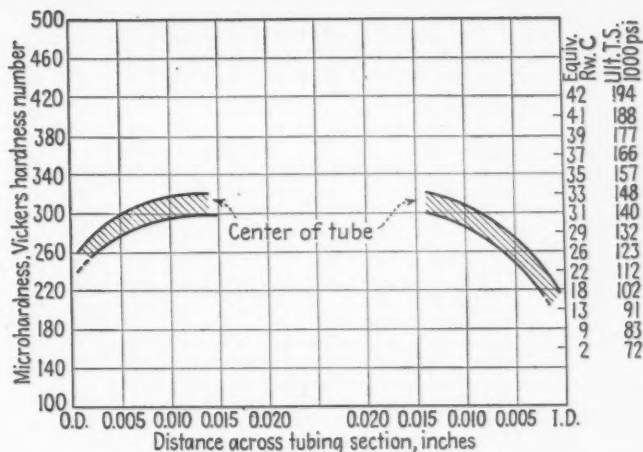
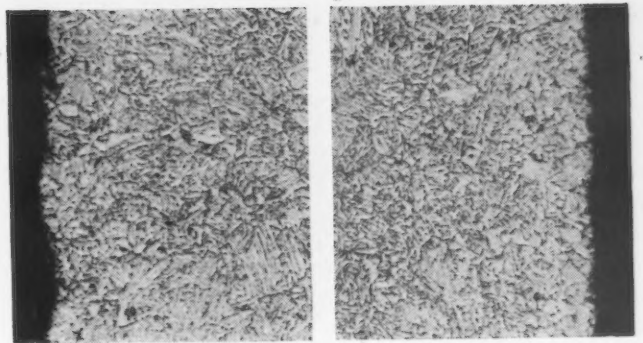


FIG. 19—0.500 in. OD x 0.031 in. wall tubing specimen, NE 8630. Austenitized 6 hr at 1600°F, air cooled. 125X.

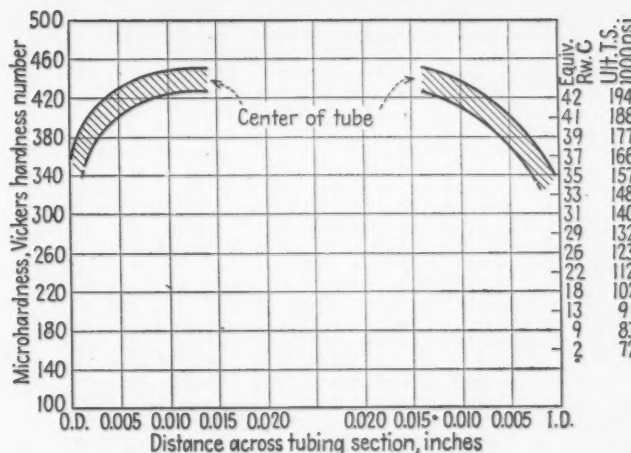
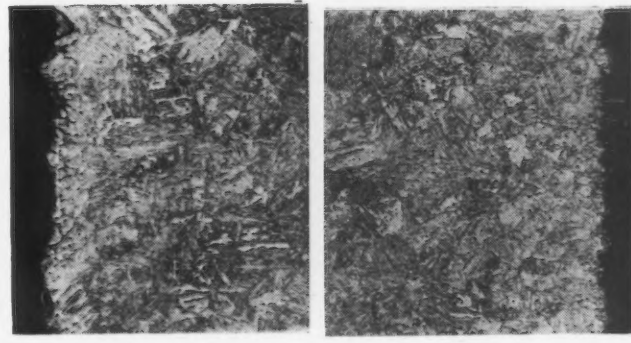


FIG. 20—0.500 in. OD x 0.031 in. wall tubing specimen, NE 8630. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

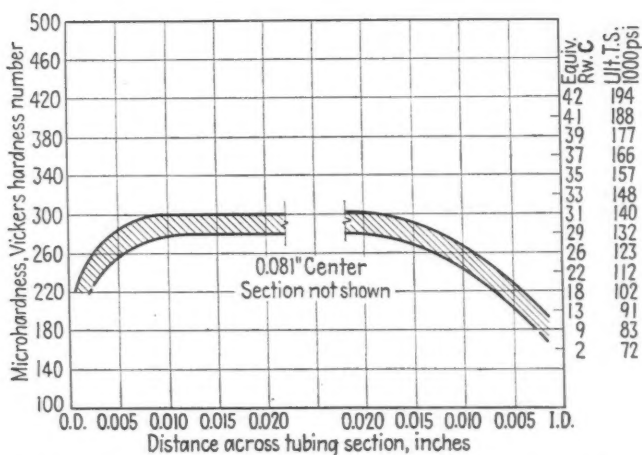
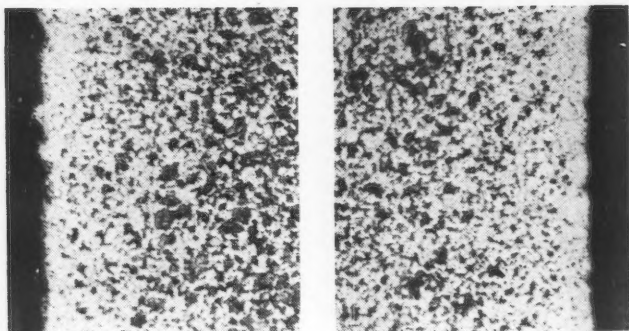


FIG. 21—1.00 in. OD x 0.125 in. wall tubing specimen, SAE 4130. Austenitized 15 min at 1600°F in semicontrolled atmosphere, air cooled. 125X.

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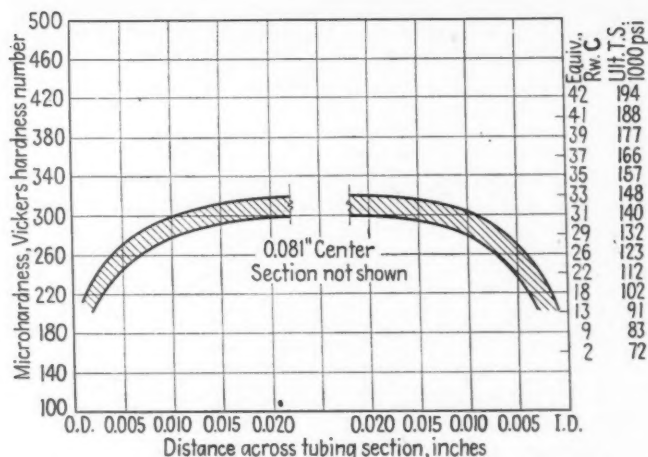
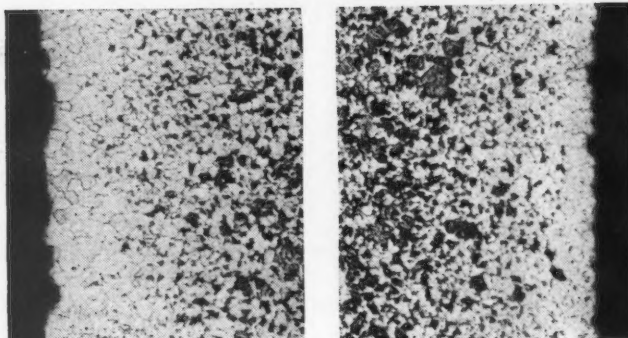


FIG. 23—1.00 in. OD x 0.125 in. wall tubing specimen, SAE 4130. Austenitized 1 hr at 1600°F, air cooled. 125X.

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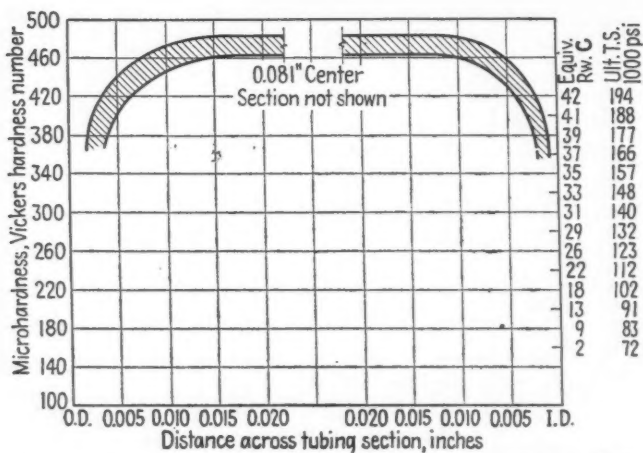
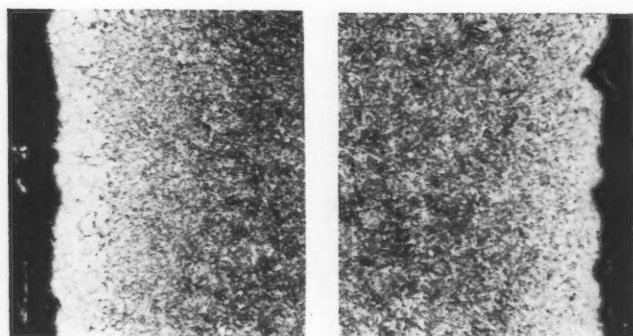


FIG. 22—1.00 in. OD x 0.125 in. wall tubing specimen, SAE 4130. Austenitized 15 min at 1600°F in semicontrolled atmosphere, oil quenched, tempered 1 hr at 800°F. 125X.

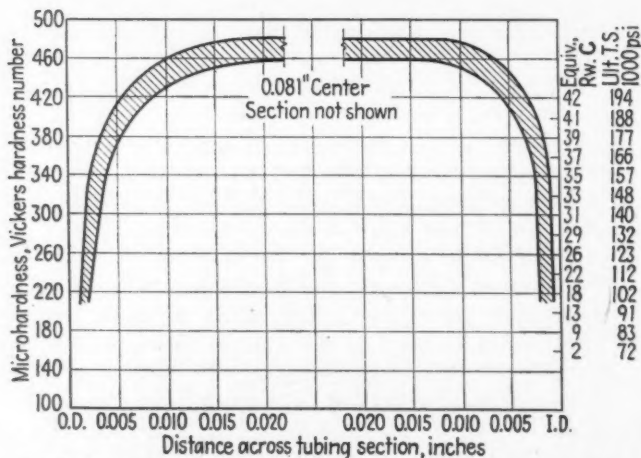
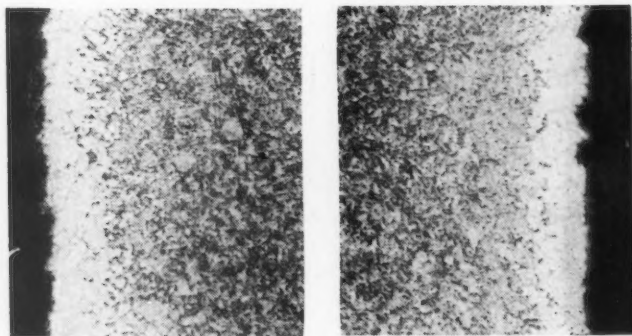


FIG. 24—1.00 in. OD x 0.125 in. wall tubing specimen, SAE 4130. Austenitized 1 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

procedures which will accurately determine the amount of decarburization in a given lot of steel stock is advised.

It is suggested that an effort be made to minimize the amount of decarburization which will take place in the normal heat treatment of critical parts by the use of salt bath or controlled atmosphere furnaces whenever possible and warranted. Processing of large, heavy section parts, necessarily treated in air

Acknowledgment

The author desires to express his appreciation to members of the Metallurgical Research Group, E. S. England and R. E. Ricketts, for their work in the preparation of test data and illustrations used in this investigation, and to the Lockheed Aircraft Corp. for sponsorship of the program and release of research material.

furnaces (often without atmospheric control) for long periods of time should provide for protection, by plating or similar masking methods, to prevent excessive decarburization of critical areas.

Additional suggestions concerning the hardness testing of parts decarburized in heat treatment include those of insuring accuracy of test and avoidance of erroneous values by proper selection and suitable preparation of test area. If such is not possible, it is recommended that pilot specimens from production lots of critical parts be sectioned and subjected to microhardness traverse to establish the extent of decarburization.

Although difficulties to be encountered in any attempts to modify design to compensate for the effects of decarburization are fully appreciated, a clear understanding of the condition by designers of critically stressed steel components has become essential to the prevention of future service failures, and therefore further clarification and evaluation of the phenomenon is to be encouraged.

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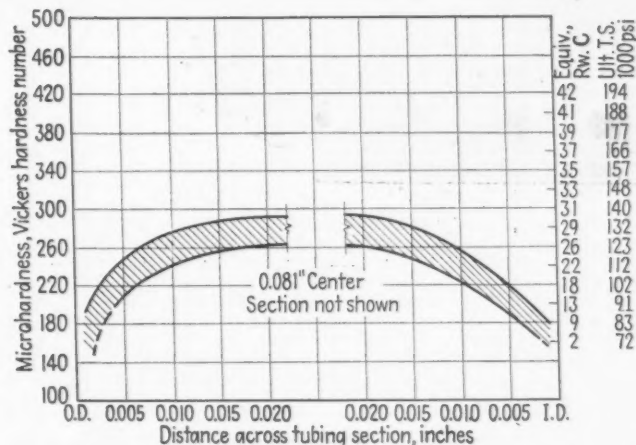
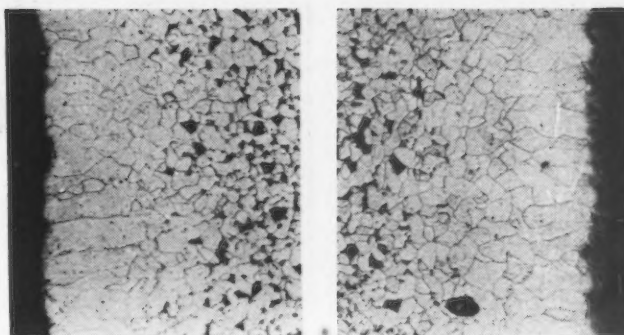


FIG. 25—1.00 in. OD x 0.125 in. wall tubing specimen, SAE 4130. Austenitized 6 hr at 1600°F, air cooled. 125X.

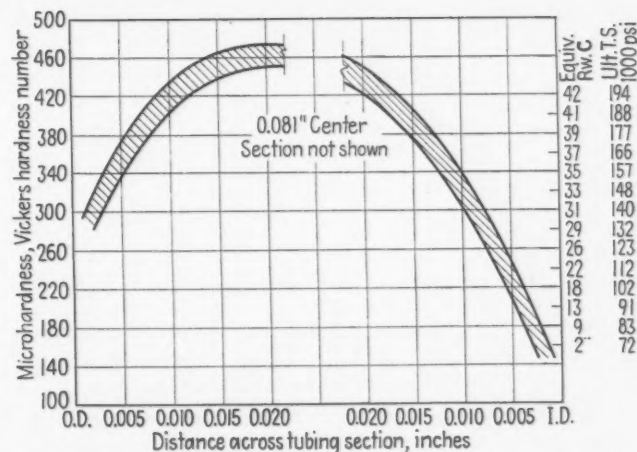
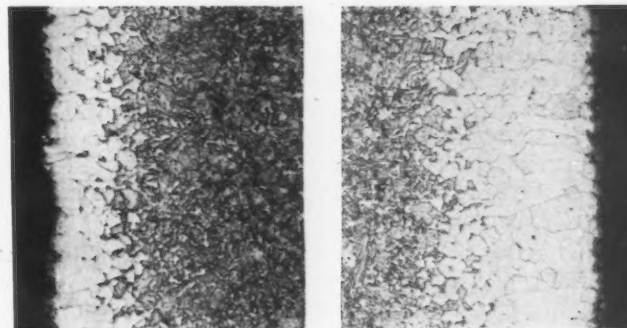


FIG. 26—1.00 in. OD x 0.125 in. wall tubing specimen, SAE 4130. Austenitized 6 hr at 1600°F, oil quenched, tempered 1 hr at 800°F. 125X.

Industrial Power Trucks

By W. A. LLOYD
Cleveland Regional Editor



ONE of the unknowns in the industrial equation is the weight of the load industry carries in converting raw materials to finished products. For metalworking plants, this unknown represents some billions of tons and is one of the largest items of cost incurred in manufacturing operations, yet it adds nothing to the value of the product.

Recent studies indicate that in typical factories a unit of material is handled 20 to 150 times from receiving dock to shipping room. The ratio varies with materials, products and processing operations, but applying the minimum to the 62,200,000 net tons of finished iron and steel made for sale in 1945, the weight handled in those plants which were the first to receive it from mills and warehouses was 1,244,000,000 tons. A ratio of 20 to 1 is believed to be conservative for the majority of metalworking plants. It is apparent, then, that despite fluctuations in steel consumption in the next few years the "load" is likely to continue to be abnormally heavy. Multiple handling pyramids costs.

Growing interest in equipment for handling materials, particularly power industrial trucks, is due in part to a reversal of certain conditions which prevailed during the war and the preceding depression. Labor cannot be obtained at a moment's notice now, as it could in 1930-1939, wages are higher, and common labor is frequently less productive.

Material handling, believed to represent the largest single item of labor cost for manufacturing industries, takes more than half the total time required in converting raw materials into finished products. If performed haphazardly or ineptly, it adds to costs through damage to materials or products, or delayed production.

Common labor cannot keep up with the pace set by modern machine operations by using only muscle power and hand-operated devices. This poses a definite need for mechanical equipment to meet the special conditions of the postwar period of abnormal demand, higher costs, keener competition and for some time, price control.

During the war, industries made remarkably effective use of power industrial trucks, despite the

LEFT

FIG. 1—This multiple drill indexing fixture is quickly and safely moved to the machine shop and returned on the truck's platform.

RIGHT

FIG. 2—Tanks holding 4 bbl of oil for quenching castings have been specially designed for handling by power truck. Tank, loaded with castings, will be set aside for cooling and another brought into place.



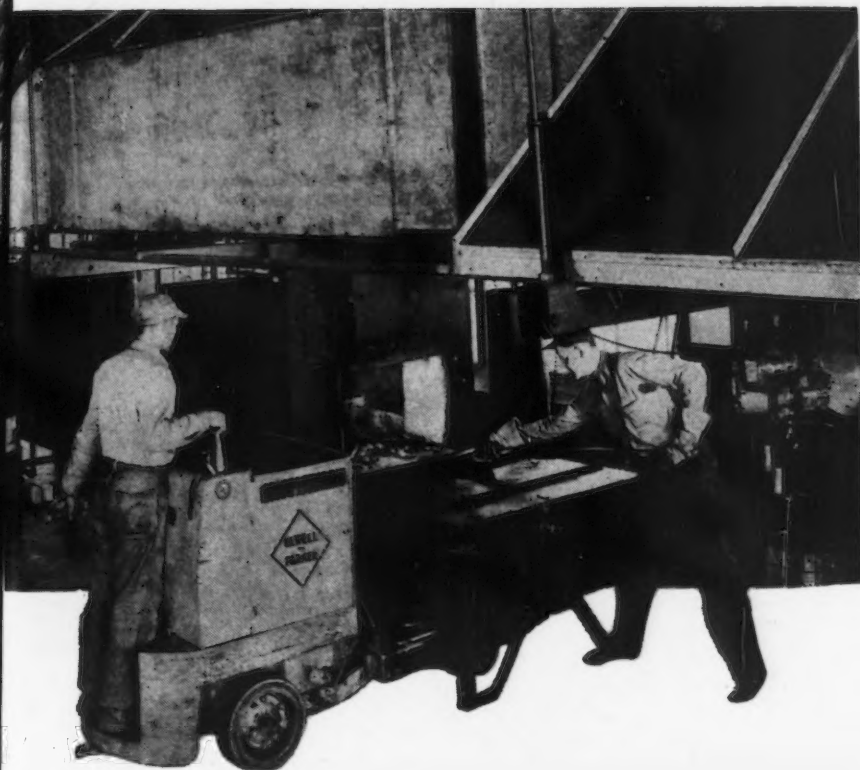
difficulty that they could not be obtained in sufficient numbers because of government requirements. The Navy set a precedent by averaging 4000 carloadings a day, using power trucks.

Such war experience emphasizes the fact that the same type of equipment and the methods which the Navy adopted are as applicable in peace as in war, and that the function of power trucks is not limited to movement of palletized loads. Case histories throughout the metalworking industry emphasize their function in coordinating manufacturing operations and show how power trucks are being used, the number of times materials need to be handled and to bring the "irreducible minimum" into less painful focus. Through the cooperation of the engineers of Elwell Parker Electric Co., Cleveland, case histories covering a number of metal-working plants where effective utilization has been made of industrial power trucks for material handling are discussed here to illustrate modern trends in the postwar use of industrial trucks.

A company manufacturing a wide variety of valves, for example, purchases most of its iron and steel castings, which it machines, assembles and finishes in complete units. This is the principal raw material with which it works in this department, and the following in sequence, are the steps or "handlings" the material undergoes from start to finish: Unloaded by hand from motor truck onto inspection floor; picked

Cut Material Handling Costs...

Effective use of industrial powered trucks for material handling as a means of counteracting current rising wage scales and declining worker productivity is discussed in this article. A number of case histories are cited covering metalworking plants which make a particularly thorough utilization of industrial trucks, and nonmanufacturing operations such as die and machine fixture handling and railroad repair work are described



other low-lift platform trucks take over, in transporting the parts from one machine or processing "station" to the next; movements of valve bodies; to machines for facing flange; boring for seat; drilling neck-end for bonnets; drilling flanges; putting in seat ring; washing; seating; tapping; assembly-testing-painting section wherein use is made of a chain conveyor system; back into skid boxes and to finished-valve storage department. If valve parts are steel, two additional movements are necessary, the first in conveying them to heat treating furnaces, second in returning them to the line.

While the foregoing operations are in progress the two industrial trucks also transport other parts through the following number of steps: for bonnets 7; for stuffing boxes 3; glands 2; stems 4; wheels 2; seat rings 3; disks 5. These

o o o

BELOW

FIG. 3—Forgings are moved from the annealing oven to outside storage for cooling, then taken to the cleaning room. Trucks and skids eliminate rehandling.

up by hand, placed in skid boxes; moved in skid boxes by means of a low-lift platform truck to storage department; removed from storage department and transported by means of the truck to temporary storage in the machining - finishing department. At this point truck returns to storage department, and from here on two





LEFT

FIG. 4—Skid load of forgings (left) has been brought to the blast cleaning unit and the truck is immediately available for moving a load of cleaned pieces without loss of time or the use of manual labor.

o o o

include the number of handlings in skid boxes from storage to the point where they merge with the bodies to form the completed valves.

Additionally, all nuts, bolts and other fittings are transported by means of the trucks. Machine tool fixtures are moved to and from the machining department, as illustrated in fig. 1. Special tanks holding as much as four barrels of oil are carried to the heat treating furnaces, as shown in fig. 2. After the heat treated castings are quenched in the oil the trucks pick up tanks with contents and move them away for cooling.

In this one integrated department, therefore, with ideal layout of modern equipment, a unit, or pound, of material in the form of iron or steel is handled at least 40 times. This does not include those limited to the lifting of the parts on or off a machine, or bench or in or out of a furnace.

Two power trucks operating exclusively in this department enable the company to apply the principle of large-load transportation to the fullest practical limits. Cost of handling industrial materials, as well known, generally varies in inverse ratio to the size of the load. Manual labor is not expended on toting jobs, but trained and employed to better effect. Loads moved with the power trucks range from 1000 to 4000 lb. It would take 30 or more laborers working hard all the time to lift and carry the material that is moved with all three trucks.

The company also manufactures bronze valves, having its own foundry and complete facilities for producing a full range of sizes and types. Due to peculiarities of plant layout, however, power trucks are not operated in these departments. Nine hand-truck wheel castings and other materials from foundry and storage through the machining and assembly rooms and to finished-valve storage areas. On the other hand, one of the power trucks which operates in the large general materials storage room helps out by transporting skid loads of brass ingots to the brass foundry.

While comprehensive comparisons cannot be made,

the two power trucks which operate exclusively in the iron and steel valve department are known to handle 10 times the actual tonnage transported by nine men working exclusively with manually-operated equipment.

A company making forgings used in gasoline and diesel engines, motor trucks, machine tools, road and mine machinery have six industrial trucks to move the material through various stages. Raw steel is received in the form of bars $1\frac{1}{2}$ to 5 in. square or diameter, which are cut to short lengths, weighing 2 to 90 lb. The most direct conversion of this material into the simplest type of forgings includes these essential steps: from railroad car or motor truck to storage by conveyor; storage to shears by conveyor; shears to hammer in skid boxes with power trucks; hammer to yard for cooling with power trucks; yard to heat treating furnaces, fig. 3, with power trucks; heat treating furnaces to inspection department with power trucks; inspection department to shipping department with power trucks; shipping department to motor truck or car with power trucks; a relatively small portion of the output is transported to the company's machining department by means of power trucks.

These steps in the movement of material do not include manual handling at furnaces, forges, inspection, and in the transfer of the forgings from skid boxes into cars or motor trucks for shipping.

From shears to shipping docks the distance is 600 to 700 ft. Skid boxes almost invariably contain 2 to 5 tons of material. The power trucks have their individual zones of operations, drivers being skilled in moving the material to keep pace with other equip-

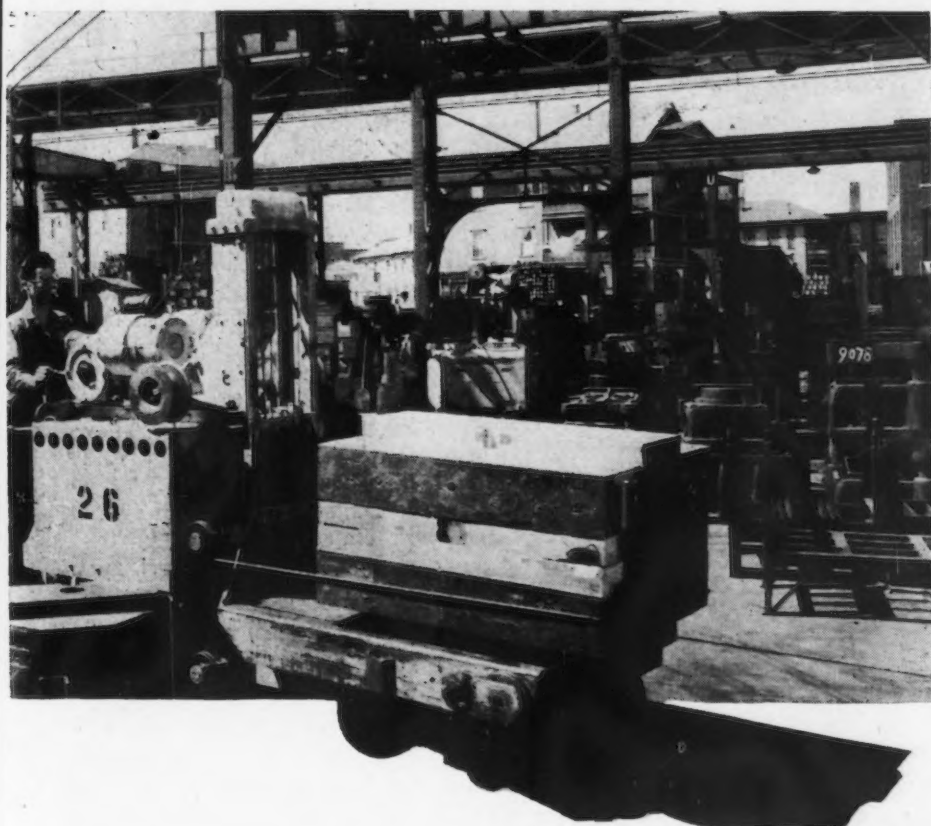


ment. Loads are spotted so that handwork in lifting the components at furnaces, forges, blast cleaning machines (fig. 4), inspection and shipping is reduced to a minimum. All dies and parts are moved to and from the machine shop by means of the trucks. Fig. 5 illustrates a die handler truck equipped with powered winch and cable for loading and unloading dies. Fig. 6 shows how this type truck simplifies and speeds up placing of dies in position. Even coal is transported from reserve piles to boiler room on truck platform.

A company manufacturing bearings and bushings is operating at capacity (May, 1946) and consumes a heavy tonnage of materials, chiefly in the form of steel and bronze strip. Its main plant includes three

bronze are received by motor truck and first placed in stock. A considerable amount of the strip steel is received on single-deck wood pallets to which the coils are fastened with steel strapping. Overhead equipment with magnet lifts these and tiers them in closely spaced formation, afterwards takes them down for handling with fork trucks. Many coils of strip steel weigh up to 2000 lb and these are transferred to power trucks in loads up to 14,000 lb.

From stock room the strip steel is moved to the coating department, where the bearing-surface metal is applied; out of the coating department it is moved to the annealing ovens; from there into stock; thence to processing machines, as shown in fig. 7, inspection, packaging, stockroom and shipping. Some bearing



LEFT

FIG. 5—Die handling power truck. Cables for loading and unloading dies are controlled from operator's normal position. Note the extensive use of skids in the storage yard to reduce handling.

o o o

BELOW

FIG. 6—Placing a die on the bed of a forging press by means of the cable arrangement on the die-handler truck.

modern buildings with 861,000 sq ft of factory space.

Sixteen power industrial trucks are kept busy handling virtually all materials at various stages. The plant engineer estimates the actual load these trucks carry as 10,000 to 15,000 tons per day, which includes handling of many loads a number of times. The work of these trucks is supplemented by overhead equipment in the receiving room and in an adjoining area where the factory's scrap products are handled. Also, by some hand shifting trucks in manufacturing, inspection and packaging departments.

Coils of strip steel and



shells are heat-treated before surface metal is applied.

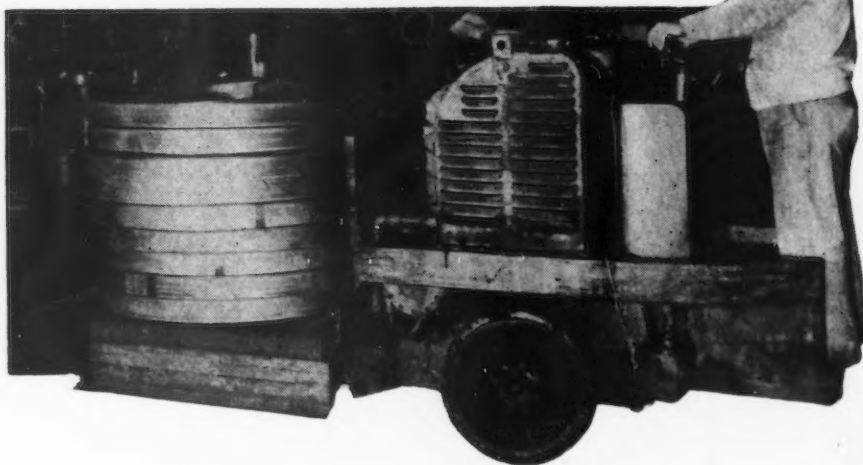
As many as 20 machine operations are performed in the manufacture of bearings. The plant engineer estimates that the materials for them are handled 100 or more times, from receiving to shipping departments. Literally hundreds of styles of bearings and bushings, in thousands of different sizes, are manufactured by this company.

"We could not accommodate the number of workers which would be necessary if the materials were to be brought to the machines by hand trucks," said the plant engineer. "The problem of keeping these machines supplied has been solved by means of power trucks, which bring in loads weighing up to 15,000 lb." Asked as to what feature in particular distinguishes them from other equipment, enabling the company to do a better job he replied: "Their flexibility. They are equal to any handling job, anywhere, anytime, and they would be as readily adaptable under any layout or system we might establish here. We keep everything moving with them; they are the greatest labor-saving equipment we have."

The manager of a company manufacturing metal wheels where the weight of material used in manufacturing averages 50 tons daily, about half of which is transported by means of one Elwell-Parker truck, has this to say:

"The truck operates around presses all day and

FIG. 7—A 12,000-lb load of coated strip steel is moved from annealing ovens to stamping department in a bearing manufacturer's plant. Steel skids of the type shown were designed to permit loads to be run into the ovens on the skids and remain there at annealing temperature (425°F) without failure of skid legs.



keeps empty platforms ready to move up to each machine when a loaded platform is ready to move. All hand-moving has been eliminated. The greatest value of the truck to us is the saving of the machine operator's time. Formerly they stopped producing to help move loaded platforms, often to the other side of the plant. This heavy work lowered the operators' efficiency. All now are sold on the power truck. They prefer to operate presses full time to moving hand trucks part of the time."

Railroads are among the largest users of all types of power trucks, and their employment of them extends from the simple transfer of goods in stores and at terminals to servicing locomotives, tenders and cars.

One railroad now regularly maneuvers tenders in its repair shops with an Elwell-Parker crane-truck rated at 10,000 lb lifting capacity. Passenger tenders, or PT tanks, weigh 85 tons without coal or water and 200 tons with a full load. They are 52 ft long, have seven pairs of wheels mounted on their respective trucks. The crane-truck tows such tenders at the end of a steel cable. When these or other tenders are to be repaired or overhauled they are switched into the yards and moved to the shops by yard-engine. In the shops and vicinity, however, the crane-truck moves them.

One end of a tender is lifted by means of an overhead crane. Its trucks are detached and towed out from under by means of the small crane-truck, shown in operation in fig. 8. A substitute shop truck is then pushed under the tender, and that end is lowered. This operation is repeated until the tender is mounted on temporary trucks.

The crane then tows the tender into the shop for repairs, and also tows the tender's trucks to place for overhauling. While waiting to assist in putting them together again, the power truck performs a wide range of other services in the shops.

Power trucks frequently are used to spot locomotives in roundhouses, in addition to changing air pumps and effecting other emergency repairs to locomotives. Railroad mechanics have learned that the little machines are tough and can withstand a lot of hard service. A remarkable fact is that some trucks built over 25 years ago still are in use in the shops.

FIG. 8—Crane-truck used in railroad yard for servicing locomotive tenders. The truck tows tender into position under the yard crane, tows wheel-trucks from beneath tender, etc.



How to Weld Aluminum

RESISTANCE welding is a metal fabricating process in which the work, two or more sheets of metal, is clamped between copper or copper alloy electrodes. These electrodes do a double job, press the pieces together and also conduct a heavy current to the joint undergoing weld. The resistance of the metal pieces to the heavy current passing through them causes intense heat. This heat, in combination with the applied pressure, produces fusion.

The first two sections of this series of four articles prepared by the engineering staff of Reynolds Metals Co., appeared in the issues of June 20 and 27, and dealt with the weldability of various alloys, gas welding techniques, and various types of arc welding. The concluding section to be published next week will consider flash and seam welding, as well as brazing and soldering.

Aluminum may be welded by any one of three resistance welding processes, spot, seam, or flash welding. The most common of these, spot welding, provides an excellent means of replacing riveted joints. Seam welding is in a sense merely another form of spot welding in which roller type electrodes are used, making it possible to space the spots so that, if necessary, a gas-tight joint may be obtained. Flash welding provides a method of butt welding either rolled or extruded shaped pieces.

Aluminum stock that is to be resistance welded must, with the exception of material to be flash-butt

The application of spot welding to aluminum is dealt with in this article, and the different types of machines are described. Attention is also directed to the necessity of adequate preweld cleaning, and the various methods of performing this are considered, together with the advantages and disadvantages of each. Information is also given on machine settings, electrode maintenance, and trouble shooting.

welded, be cleaned prior to the welding operation. Aluminum alloys are sometimes received with an oil film and certain ink identification marking on the surface, and in addition, a film of aluminum oxide, nonuniform in character, is always present. All of these extraneous materials must be removed very thoroughly before the metal can be joined by resistance welding.

The purpose of preweld surface preparation is to eliminate those variations in the contact surface resistance which might cause variations of welding heat, and to reduce to a minimum the heat between the aluminum sheet and the welding electrode. If the sheet is not properly cleaned, spitting, cracked spots, and weak joints will frequently occur. Likewise, there will probably be excessive electrode pickup.

The ideal surface preparation method would be one

TABLE VI
Machine Settings for Spot Welding Aluminum Alloys on AC Welders

Thickness (inches)	Time Cyc.	Welding		Current Amperes		5/8-in. Diam Electrode		
		2S-O* to 2S-H	3S-1/2-H to 3S-H	52S R353-W R353-T	Pureclad 24S-T	Tip Shape	Pressure	
						5/8-in. Diam Cone Angle (degrees)	Min Lb	Max Lb
0.016	4	15,000	14,000	13,500	14,500	7	200	350
0.020	6	16,000	15,000	15,000	16,000	7	250	400
0.025	6	17,500	16,000	16,000	17,500	7	300	450
0.032	8	19,000	18,000	18,000	19,000	7	350	500
0.040	8	21,000	19,500	19,500	21,000	7	425	600
0.051	10	23,000	22,000	22,000	23,000	7	525	700
0.064	10	26,000	24,500	24,500	26,000	7	600	800
0.081	12	29,000	27,000	27,500	29,000	7	700	900
0.102	12	32,500	30,000	31,000	32,000	7	800	1050
0.128	15	36,000	33,000	34,000	35,000	11	900	1200

* Definition of letter designations: O—Annealed; H—Full hard; W—Quenched, not aged; T—Fully heat treated.

that would remove all mechanically and chemically deposited films without attacking the surface, and in addition, would leave the surface protected with a uniform film of low resistance which would prevent the re-formation of an oxide film. Unfortunately, none of the cleaning methods available today meet all these requirements. There are, however, several methods, both mechanical and chemical, that meet the first requirement with a fair degree of success.

Regardless of whether the oxide film is to be removed by chemical or mechanical means, the first step in the preparation for resistance welding is to remove oil and grease. Any oil or grease dissolving operation, combined with some kind of mechanical action such as spraying or wiping, is satisfactory if it results in the positive removal of all grease and oil. Mechanical baths and vapor degreasers are also highly satisfactory, while less dependable is hand wiping with acetone or alcohol.

Effective degreasing is vital. If oil and dirt are not removed from the aluminum surface it will be impossible to remove the oxide film, since most of the agents capable of attacking this film are rendered ineffective to a large degree by the presence of oil and grease. The surface must be chemically clean.

Mechanical oxide removal is preferred where the volume of work is not too large since it does not require a large capital investment. Also, it is possible to limit the cleaning to only that portion of the surface that is to be welded. Probably the most important advantage of this method is that it does completely remove the oxide film and eliminates any possibility of an immediate redeposit of another high-resistance film.

On the negative side, mechanical cleaning is slow and involves high labor costs because of the hand work. Furthermore, it is difficult to obtain a uniformly clean surface since so much depends upon the human element.

The oxide film may be scraped off by any mechanical operation utilizing the abrasive action of wire brush, abrasive paper or steel wool. It is recommended that stainless steel wool be used to avoid contamination of the aluminum. In any such mechanical cleaning operation, the action must be sufficiently severe to cut through the oxide film, yet not so harsh as to form an excessively rough or scratched surface.

There are many chemical agents which will readily remove the oxide film from an aluminum surface. Unfortunately, a great many of these chemicals will not only remove the film but also will attack the metal itself.

Among popular chemical oxide-removing agents are the mild sulfur-base acids. Since their action is rather slow, the time of application is not critical. They attack the oxide with comparative rapidity, but their action on the aluminum itself is considerably delayed so that an appreciable tolerance in exposure time may be permitted.

Another material frequently used is a 3 pct solution of hydrofluoric acid. This is a very powerful agent for removing aluminum oxide, but, unfortunately, its action on the aluminum alloy itself is also very violent. The operation, therefore, although very fast, is critical, and must be timed with extreme care.

Sodium hydroxide is another agent that will remove aluminum oxide very readily. It has, however, a tendency to form a highly resistant deposit which makes welding even more difficult than on oxidized aluminum surfaces. By dipping the parts in commercial nitric acid after water rinsing from the caustic tank, this adherent is removed. An additional water rinse is then necessary.

Among other cleaning methods in popular use are a phosphoric-chromic acid type of cleaner, a solution of 5 pct chromic plus 15 pct sulfuric acid at 149°F, and a solution of 10 pct phosphoric acid at 120°F. Chemical oxide cleaners of many similar types are supplied by various manufacturers, whose individual recommendations regarding use should be followed.

The usual method of removing the oxide film from aluminum is to immerse the surface to be welded in a solution of one of the aforementioned chemical agents. An alternate method is to suspend the oxide removing agent in a paste or jelly, for example, a solution of gum tragacanth in water, which is spread or smeared on the surface to be cleaned. The latter process, however, is not too highly recommended since it is difficult to control accurately and is messy and slow. It is, however, useful for the cleaning of assembled parts which are too large for immersion cleaning.

Just as there are advantages and disadvantages in mechanical cleaning so are there similar plus and minus qualities in the use of the chemical method for removing aluminum oxides. The advantages of chemical oxide removal are extreme uniformity of results, the ability to reproduce constantly the same surface conditions, provided proper process control is exercised, independently of the skill of any operator, and low cleaning costs. After the initial installation, the only labor cost is that of loading and unloading the cleaning baskets, and a comparatively small number of persons in the cleaning department can readily provide sufficient material for the welders.

Among the disadvantages of chemical cleaning is the necessity for accurate control of the time of exposure of the surface to a cleaning agent, since either underexposure or overexposure is likely to result in a higher surface resistance. Since corrosive acids or alkalis are often used, there is also the potential danger of injury to negligent workers. Chemical cleaning also presents a high initial installation cost for equipment, including corrosion-resistant tanks, auto-

TABLE VII
Minimum Shear Strength of Spot Weld in
Aluminum Alloys

Thicknesses of Thinner Sheet (inches)	2S	3S	52S, R353 & R361 (All Tempers except Annealed)	R301 and Clad 14S, 17S, 24S
Shear Strength (lb.)				
0.012	18	25	84	105
0.016	40	55	120	140
0.020	60	100	150	175
0.025	90	140	170	225
0.032	125	210	265	295
0.040	170	280	365	420
0.051	235	370	490	560
0.064	300	545	665	770
0.072	350	560	770	950
0.081	405	595	910	1155
0.091	455	665	1000	1295
0.102	510	735	1155	1435
0.114	545	770	1435	1575
0.125	595	825	1680	1680

matic temperature and time control devices, hoists, dipping baskets and conveyors. It can be seen, therefore, that chemical cleaning can be used to the best advantage where there is a comparatively large volume of resistance welding to be done.

The importance of proper preweld preparation cannot be overstressed. While other factors which present difficulties enter into the resistance welding of aluminum, it appears that at least 75 pct of the trouble experienced with surface spitting, welding spitting, irregularity in weld shapes, and excessive electrode pickup can be attributed to improper surface preparation.

Spot Welding

Aluminum's inherent characteristics of high thermal conductivity and low electrical resistance usually require greater capacity machines and higher current densities to weld by the resistance method than is necessary in many other metals. Two basic types of resistance welding equipment are used for spot welding aluminum alloys. Classified on the basis of the electrical system used for supplying the welding current, they are as follows: Alternating current (ac) and stored energy. Stored energy equipment consists of three forms, electromagnetic, electrostatic, and electrochemical (storage battery).

Conventional ac spot welders equipped with electronic controls are used for making welds in all welded metals and alloys. The use of electronic equipment as compared to less precise timing equipment results in improvement of the appearance of the welds as well as the consistency of the weld strength.

A principal objection to the use of ac spot welding machines for welding aluminum is the high kva single-phase load at a low power factor. The installation of static condensers in series with the welding transformer primary can help to improve this condition. With series capacitors the power factor can be corrected to unity and the kva demand is reduced. It is sometimes more economical to use energy storage welders rather than to install a heavy current distribution system.

In order to reduce the load on the power system and so cut current costs, several methods of resistance welding have been developed incorporating the stored-energy principle. Such equipment makes use of both electromagnetic, electrostatic, and electrochemical methods of energy storage.

An electromagnetic stored-energy welder consists fundamentally of a rectifier which receives three-phase ac from the power supply and converts it into dc, a reactor which receives the dc and stores it over a period of time, a contactor, and a maximum-current relay that is interposed between the rectifier and the reactor.

The operation of this type of spot welder is rather simple. An interruption of the charging current in the primary winding causes the electromagnetic energy stored in the transformer to be discharged through the secondary, which is connected to the electrodes. The electrodes are closed prior to the storing of energy.

The electromagnetic stored energy type of welder usually incorporates a variable pressure cycle. This consists of: (1) Applying a high initial load on the work to establish uniform contact, (2) decreasing the

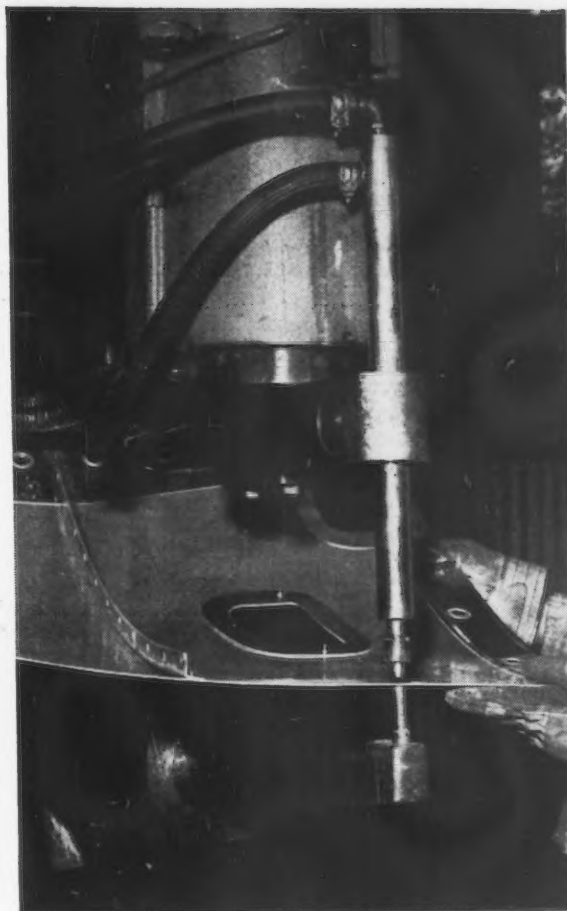


FIG. 12—Spotwelding serves as a highly efficient production process for such jobs as attaching formers and reinforcing strips to sections of aircraft cowling.

pressure for welding and (3) raising it again to work the weld mechanically while it is still plastic. There is also a slight preheating effect since the electrodes must be closed while energy is being stored and, hence, a small negative current flows into the work.

Condenser discharge or capacitor type stored energy welding is the second spot welding method to be developed expressly for the welding of aluminum and aluminum alloys. This method is described as electrostatic stored energy welding. The sequence is completely automatic, and the charge and discharge of stored energy are electronically controlled. During the time interval between spot welds, the capacitor bank is charged to a pre-set voltage level and then discharged into the machine to make the weld.

Welding power is supplied by energy taken from an ordinary single three-phase source. The three-phase power is converted into high voltage dc by means of rectifier tubes and then delivered to the capacitor bank where energy is accumulated over a relatively long period of time, usually several times that required for the discharge. After the pre-set quantity of energy has been accumulated, the operation of electronic control tubes causes the capacitor bank to discharge into the transformer primary. The discharge is in the form of a single unidirectional current impulse and is magnified many times by the transformer to produce the current necessary for welding.

When welding with electrostatic stored-energy equipment, a constant high-value pressure is generally

employed. However, equipment of this type may be obtained which provides medium pressure for welding with a higher pressure at the end of the weld to cause a forging action on the weld metal.

Storage Battery Welding

A more recent development, storage battery welding, extends the use of resistance welding to communities and locations, where it formerly was impossible because of power line limitations.

In addition to the fact that small power lines can provide all the current needed, a balanced line load is maintained, since power from the wave of each phase is fed through a transformer and rectifier to the battery. With this type of equipment, the time which elapses between spots is utilized in recharging the battery. The simplicity of the electric circuits permits maintenance by persons possessing only a rudimentary knowledge of electricity.

It is highly important that the machine current setting be made prior to welding in order to avoid the welding faults which will otherwise result. Settings for any gage of aluminum alloys may be determined from charts supplied by the manufacturer of the particular resistance welder being employed. The manufacturer's settings, however, are only the starting point. In lieu of such data, table VI may prove helpful.

It is well known that there are a number of commonly recognized variables which affect successful resistance welding. For example, the diameter of the electrode tip will vary because of subsequent dressings. Frequent tests should, therefore, be made to determine whether or not the tip diameter is affecting the quality of the weld.

While it is realized that pressure has a definite effect upon the weld, the operator often fails to check air gages to see that the pressure indication is correct.

Unless the material to be welded is cleaned exactly the same from day to day, the weld nuggets are bound to vary. The electrical resistance of samples of a given sheet have also been known to vary. Welding heat may be cut down by dirty contact surface on the secondary side of the welding transformer.

In view of these and other variables, a trial-and-error method is the only practicable method to employ. The best way to determine correct machine setting is to have sample setups made for each job. Using these as a starting point, the setup man then increases or decreases the current, changes the accumulated energy, number of cycles or whatever else is necessary until the best welds, as determined by tests, have been secured. That setting can then be used for actual production, but frequent tests should be run to make sure that the weld quality is maintained. Table VII gives the minimum shear strength to be expected from various thicknesses of spot weld aluminum alloys.

Welding Tips

With high pressures, the contact resistance between the sheets will be more uniform. Consequently, higher pressures will reduce the number of faulty welds, provided that the machine setting is correct. The temperature of the electrode tips may be reduced by fast timing, which will result in longer tip life and more spots between tip cleanings.

If all the heat of a weld is applied for a very short period, as is the case when fast timing is employed,

there will be insufficient time for heat to be conducted through the metal adjacent to the welding. Spot welds produced under these conditions will present a minimum of surface oxides because the surfaces of the sheet are less affected by welding heat. Fast timing also tends to produce a bridge of cold metal which will support the electrode tips and thus reduce surface indentation.

To weld two sheets of unequal thickness with two electrodes of the same shape, set the machine as it would be set for welding two sheets of the thinner thickness but increase the heat slightly. If a dome tip electrode is used in connection with a flat tip, the correct setting of the machine is as it would be set for welding two sheets of whichever thickness is in contact with the dome tip. If the heavy sheet is the one in contact with the dome tip, use slightly less heat than would normally be required for two sheets of the same thickness. If the thin sheet is in contact with the dome tip, use slightly more heat than is usually used for two sheets of this gage.

When welding three sheets of the same gage, the resistance welder should be set the same as for two thicknesses and the heat adjusted until the best results are obtained. The setup man will greatly simplify his problem in this particular operation if he makes a series of test spots in a coupon and then tears the weld apart to see if it will pull buttons. If the spot weld between the first and second sheet is more than adequate and the spot between the second and third sheet is small, the sheet will tear in the small spot. This definitely indicates an improper distribution of pressure between the sheets and should be eliminated by correctly shaping and dressing the tips. The weld nugget can be drawn in the direction of either sheet by properly shaping the welding electrode tips.

The proper results will be indicated by a button in which the nuggets are equal in size indicating evenly distributed pressure between the three sheets so that contact resistance between the three sheets is equal. Should the first and second sheets be more firmly pressed together over a small area because of the sharp dome-shaped tip, the nugget between these two sheets will be small. The resistance between the second and third sheets, which are not so firmly in contact, will be greater, hence a larger nugget.

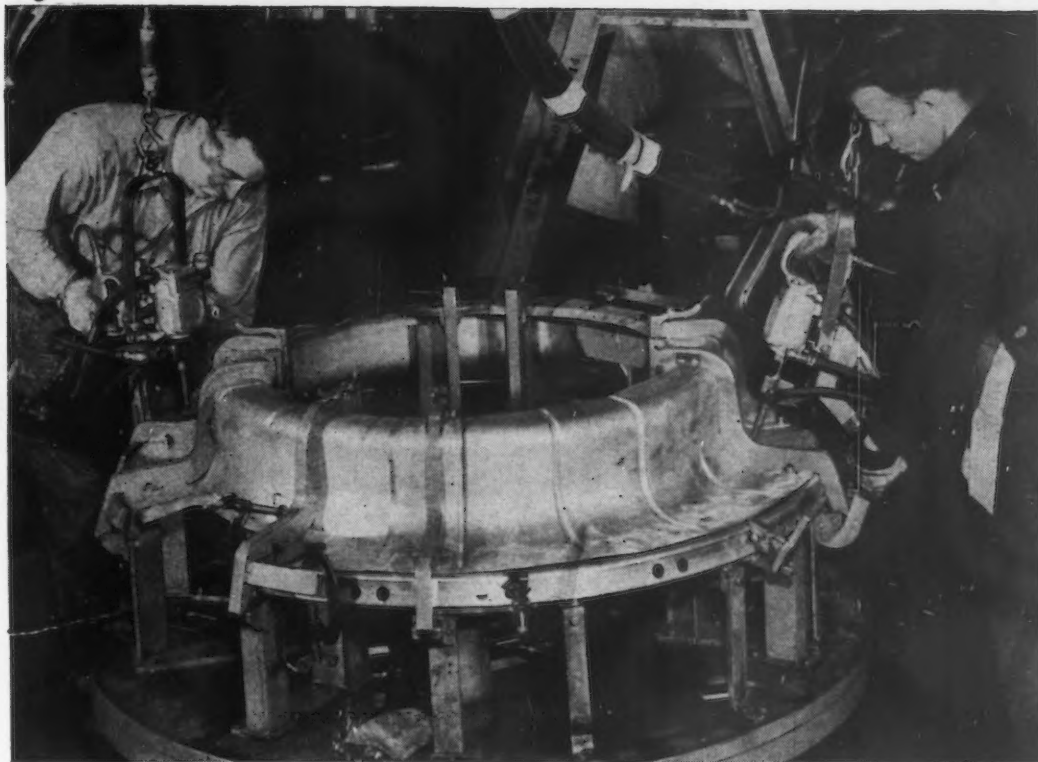
Spot Welding Faults

The defects which appear in aluminum spot welds should be recognized by the welding operator. Most common of these are cracks in the weld surface, tip pickup, and welds which do not hold. Though not commonly classified as defects, the welding operator should also see that his spacing is uniform and that the proper edge distance is being maintained.

The number of surface indentations which appear are generally unavoidable. These indentations are caused by shrinkage of the weld metal and must be expected if true fusion is to be obtained. To spot weld aluminum successfully, the machine operator should be taught to recognize readily the difference between a burn mark, tip pickup, and a pressure mark.

A burned spot weld is usually indicated by a star-shaped or radial crack appearing in the center of the spot. It is the result of: (1) Dirty metal, (2) too warm electrode tips, (3) too low pressure or (4) too high current. A micrograph will show whether or not

FIG. 13—Large sections not easily handled on conventional machines can be spot-welded by the use of portable equipment with specially designed lower electrodes.



the spot is too near the surface. Dirty metal or electrode tips, due to pickup, will tend to concentrate the welding heat at the surface. Such a weld makes it easy for corrosion to occur, with consequent weakening of the weld.

Cause of Tip Pickup

Tip pickup is a fault resulting from the alloying of the aluminum sheet with copper from the electrode. It can be controlled by proper cooling, by using a large enough tip for the gage of metal being welded, and by carefully cleaning the metal before welding. Too high a welding current or too low a pressure may also contribute to this difficulty.

In the spot welding of aluminum, holes are sometimes burned through the sheets. Excluding mechanical or electrical trouble of the machine or controls, there are four principal causes of this difficulty: (1) Electrodes do not effectively squeeze the sheets, (2) foreign material such as paper, steel wool, washers, etc., gets between the sheets being welded, (3) emery dust or emery cloth is adhering to the upper electrode, (4) welding is attempted at a point where there is a screw, projection or drilled hole. If none of the above symptoms appear to be the cause of the difficulty, inspect the machine.

Very recently, new developments in spot welding have led to the refrigeration of welding tips. This action has been taken because aluminum readily alloys

with copper, especially at high temperatures. Therefore, it is important that the temperature of the copper electrode face in contact with the aluminum be kept as low as possible in order to avoid pickup. Refrigeration is basically used to keep the electrode face temperature low enough to minimize alloying.

By using a refrigerated electrode it is possible to increase appreciably the number of spot welds between tip cleanings. Shear tests are unusually consistent, and the welds entirely satisfactory despite a long period between tip cleanings. This condition is particularly noticeable if the normal cooling water temperature used in lieu of refrigeration is below 60°F.

Coolant Temperatures

Many users of refrigerated tips have standardized on coolant temperatures of between 0° and 10°F since it gives better results in by far the greater number of cases. There is some evidence to indicate that for light gage aluminum (0.020 in.) a temperature of 15° to 20°F works very well, although the 0° to 10° range is superior. A minimum of 2 gpm of coolant should be circulated in each electrode.

A thorough study of the individual requirements of each spotwelding machine should be made before attempting to use refrigeration, as in those cases where an adequate supply of cooling water is available results may well be comparable to those obtained from refrigeration.

Engineers Scan Wartime Developments



AMONG the notables attending the ASTM meeting were (seated, left to right): I. C. Mathews, research laboratories, Eastman Kodak Co., Rochester, N. Y., vice chairman, ASTM Western New York District Committee; J. J. Mattiello, vice-president and technical director, Hilo Varnish Corp., Brooklyn, the Edgar Marburg lecturer; F. N. Speller, metallurgical consultant, Pittsburgh, who was awarded an honorary ASTM membership. (Standing, left to right): B. McCarthy, Wickwire Spencer Steel Co., Buffalo, chairman, Western New York District Committee, ASTM; and C. S. Reeve, consulting chemist, Leonia, N. J., awarded honorary ASTM membership.

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IN SPITE of the distracting influences of the clear, warm weather, nearby Lake Erie and Niagara Falls, and starry-eyed honeymooners, the 1800 members and visitors that registered for the 49th annual meeting of the American Society for Testing Materials, in Buffalo, last week, toiled diligently at the task at hand—that of forging ahead with the solution of many of the engineering problems confronting industry today. As evidenced by the well-attended technical sessions, committee meetings and exhibits, and the interest displayed therein, the week-long session was indeed a success.

The election of A. W. Carpenter, manager of testing laboratories, The B. F. Goodrich Co., Akron, and R. L. Templin, assistant director of research and chief engineer of tests, Aluminum Co. of America, New Kensington, Pa., as president and vice-president, respectively, for the coming year was announced at the annual dinner on Wednesday.

In his annual address, "Challenge of National and International Affairs to the Engineer," retiring ASTM president, J. R. Townsend, materials engineer, Bell Telephone Laboratories, Inc., stressed the need for participation of engineers and technicians in both national and international affairs to complement the efforts of politicians and statesmen. The guest speaker, B. K. Sandwell, editor of *Saturday Night*, Toronto,



Ontario, extended president Townsend's thoughts a bit further in his address "A Testing Time for Canada," in which he emphasized that not only Canada, but also Great Britain and the United States, were facing a test of their courage and determination to maintain their high standards of democracy in the postwar era.

Also on the program at the annual dinner was the presentation of honorary memberships to the following men, who had devoted many years toward the development and promotion of the interests of ASTM: W. H. Fulweiler, consulting chemist, Philadelphia; J. O. Leech, formerly assistant manager, Metallurgical Div., Pittsburgh District, Carnegie-Illinois Steel Corp.; J. S. Miller, consultant on asphalt technology, Rahway, N. J.; C. S. Reeve, consulting chemist, Leonia, N. J.; J. S. Shuman, inspecting engineer, Jones & Laughlin Steel Corp., Pittsburgh; and F. N. Speller, metallurgical consultant, Pittsburgh.

In intimate contact with the problems that faced the protective coating industry during the war, Dr. J. J. Mattiello, vice-president and technical director, Hilo Varnish Corp., Brooklyn, ably discussed the development of that industry in his presentation of the 20th Edgar Marburg Lecture "Protective Organic Coatings as Engineering Materials." Shifting availability of raw materials, conservation of raw materials and producing organic coatings to meet requirements for global warfare, were the three acute difficulties to be overcome by the technical men of the protective coating industry. In addition to the well known uses of paint for corrosion resistance, fire retardation (naval vessels), decorative effects, etc., a practical application not hitherto appreciated, is that a smooth paint finish on a 400 mph fighter airplane effected an increase in speed of about 13 mph, a factor of vital importance during the war for it effected a proportional increase in range at a given speed with a given gasoline supply. The speaker also pointed out that protective organic coatings are a necessary and integral part of all industrial and chemical engineering industries, and that the industry is gradually breaking away from the age of craftsmanship into an era where processes and products will be more scientifically controlled.

Preceding the Edgar Marburg Lecture, the Charles B. Dudley Medal was awarded to H. R. Copson, research chemist, International Nickel Co., Bayonne,

With Eye to Postwar Era

Developments and improvements made with engineering materials, testing methods and testing equipment during recent years, have been carefully scrutinized at this first postwar ASTM annual meeting, with an eye to peacetime applications.

N. J., for his paper on "A Theory of the Mechanism of Rusting of Low Alloy Steels in the Atmosphere." R. C. Brumfield, instructor in mechanical engineering, California Institute of Technology, Pasadena, Cal., was announced as the recipient of the Richard L. Templin Award, for his paper on "A Sulfur Print Method for the Study of Crack Growth in the Corrosion-Fatigue Metals." Both of these papers have been published in the 1945 ASTM *Proceedings*.

Abstracts of papers attracting more than usual interest at sessions attended by the metalworking plant engineers are presented herewith.

High Temperature Alloys for Gas Turbines

Four extremely interesting and informative papers were presented at a "full house" session Thursday morning, covering government-sponsored work carried on in the development and testing of high temperature alloys. In view of the detailed manner in which the data was necessarily presented, other than a brief mention of the papers is not possible herein.

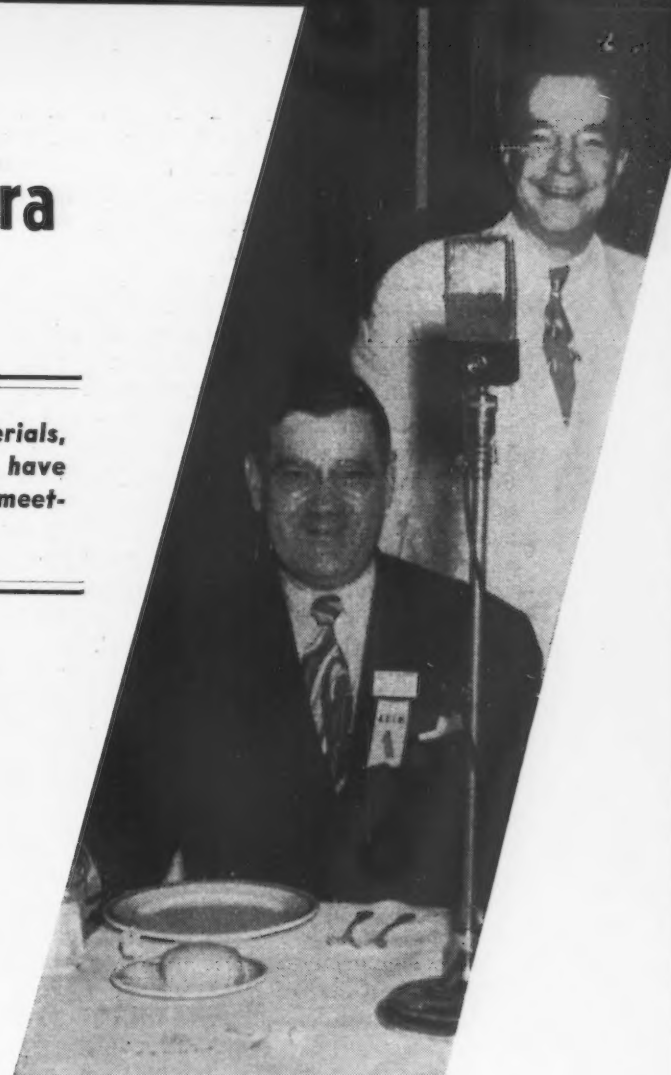
H. C. Cross and W. F. Simmons, Battelle Memorial Institute, Columbus, Ohio, in a paper entitled "Heat Resisting Metals for Gas Turbine Parts," outlined the sources of supply, compositions, fabrication procedures and heat treatments used for many Cr-Ni-Fe, Cr-Ni-Co-Fe, Co-Cr, and Co-Cr-Ni alloys. Some of the test specimens were supplied in wrought form and some were precision-cast specimens.

In their paper "High Temperature Alloys Developed for Aircraft Turbosuperchargers and Gas Turbines," J. W. Freeman, E. E. Reynolds, and A. E. White, University of Michigan, presented data for approximately 100 experimental alloys, compositions of which ranged from slightly modified 18-8 types to cobalt-base alloys containing little or no iron. In most of the alloys, various ratios of Cr-Ni-Co were alloyed with molybdenum, tungsten, columbium and titanium. The alloys were roughly classified as (1) austenitic-base alloys which only develop high yield strengths at room temperature after cold work, (2) age-hardenable alloys which can be heat treated to high yield strengths, and (3) precision-cast alloys.

The generalities the authors drew from their test results were: (1) High room-temperature yield strengths can only be developed by cold working the alloys at temperatures below 1700°F except in age-hardening alloys of the age-hardenable Inconel type; (2) the best combination of strength and ductility at

1200°F was generally found in alloys hot worked down to temperatures between 1700° and 1200°F; (3) superior rupture properties at 1200°F accompanied by rather low ductility can be imparted by hot-cold working at temperatures between 1200° and 1700°F after solution treatment; (4) hot-cold worked materials have better load-carrying ability at 1200°F under high stresses and for short time periods while solution-treated materials are better under low stresses and for long time periods; (5) solution treatment for most alloys seems to develop the best properties at 1350°F; (6) alloys in the precision-cast form have much better properties at 1700°F and 1800°F than in the wrought form—this is true for certain alloys at 1350°F; and (7) prior heat treatment tends to influence the 1700° and 1800°F properties of wrought alloys.

An investigation of chromium-base alloys for use as gas turbine blades operating in an oxidizing atmosphere was reported by R. M. Parke and F. P. Bens,



ASTM presidents. Seated is J. A. R. Townsend, materials engineer, Bell Telephone Laboratories, New York, the retiring president of ASTM. Standing is the newly elected ASTM president, A. W. Carpenter, manager of testing laboratories, B. F. Goodrich Co., Akron, Ohio.

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Climax Molybdenum Co., Detroit, in their paper "Chromium Base Alloys." Chromium was selected as the alloy base not only because of its corrosion resistance, but also because of its high melting point, in the belief that the highest strength at 1600°F was not likely to be obtained with the low-melting metals. Extensive work was done on the Cr-Fe-Mo and Cr-Fe-W alloys. The inherent brittleness of the chromium-rich alloys led to considerable work on improving ductility at 1600°F; however, these alloys did not show any measurable ductility at room temperature.

A good combination of ductility and strength at 1600°F was obtained in alloys containing from about 60 pct Cr, 25 pct Fe and 15 pct Mo to 60 pct Cr, 15 pct Fe and 25 pct Mo. Stress-rupture tests on castings containing 60 pct Cr, 15 pct Fe and 25 pct Mo supported a load of 30,000 psi at 1600°F for 430 hr with a 6 pct elongation and a 6 pct reduction of area. This alloy, which is machinable, is believed to be the most promising of the series investigated.

The role played by the Hastelloy and Stellite alloys as high temperature materials was revealed by F. S. Badger, vice-president in charge of research, Haynes Stellite Co., Kokomo, Ind., in his paper on "Metallurgy of High Temperature Alloys Used in Current Gas Turbine Designs."

At the conclusion of the presentations of the formal papers, H. C. Cross announced that the four NDRC projects, under which the high temperature alloy work had been done, have been discontinued. However, Battelle Memorial Institute has been awarded a contract by the Office of Research and Inventions, Navy Dept., to continue the work with those alloys that appear to have promise (for example, the chromium-base and age-hardenable Inconel), as well as some ceramic materials now under consideration.

In the general discussion that followed, N. J. Grant, MIT, pointed out that in the precision-cast alloys, a very fine grain size gives brittle failure, while the very coarse tends to give unpredictable values. The medium grain size results in the best and most reproducible properties. The primary factors in controlling grain size are metal and mold temperature.

Fatigue Testing of Bearings

THE symposium on bearings left no doubt in the minds of those present that fatigue failure is the most prominent method by which bearings fail and that present-day fatigue testing is inadequate, due to the wide dispersion, or scatter, of test results. In the discussion to the paper "Fatigue Testing Machines for Ball and Roller Bearings" by T. Barish, consulting engineer, Wash., D. C., it was brought out that a fatigue test is considered NG unless 20 to 30 bearings have been tested.

These views were particularly emphasized by H. R. Gibbons, Hyatt Bearing Div., General Motors Corp., Harrison, N. J., in his paper "Fatigue Testing of Roller Bearings," in which he went so far as to compare curves of bearing-life dispersion and human-life expectancy.

Following a brief discussion of the development of fatigue testing equipment and the development of bearing load ratings, Mr. Gibbons presented data illustrating the limiting value of tests due to life dispersion effects. Bearing failure may occur on the inner race, the outer race, or on any one of the several rollers of the bearing. Further, such variables as (1)



TOASTMASTER at the annual ASTM banquet was T. L. Mayer (seated, left), department of technology, Buffalo Public Library. Guest speaker at the dinner was B. K. Sandwell (seated, right), editor, *Saturday Night*, Toronto. Standing, right, is J. S. Miller, consultant on asphalt technology, Rahway, N. J., awarded an honorary ASTM membership. On Mr. Miller's right is O. W. Ellis, Ontario Research Foundation, Toronto.

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type of lubricant used, (2) variation of pressure with speed of rotation, (3) differences in metallurgical aspects of steels used for bearings, (4) complexities caused by heat treatment practices, and (5) workmanship, all tend to complicate any testing procedure setup.

He went on to say, however, that within practical limits of operating speeds and loads, an S-N curve can be plotted (contact stresses v. cycles to failure) and an endurance limit for roller bearings indicated.

A new approach to the problem of fatigue failure, and claimed by some of the experts present to be the first metallurgical presentation of its kind, was the report of "Metallographic Observations of Ball Bearing Fatigue Phenomena" by A. B. Jones, Engineering Dept., New Departure Div., General Motors Corp., Bristol, Conn. The bearing-race material under discussion was SAE 52100 (0.95 to 1.10 pct C, 1.20 to 1.50 pct Cr), which is used hardened to a fully martensitic structure 63 to 65 RC and which is subjected to very heavy compressive stresses exceeding 450,000 psi and sometimes as high as 750,000 psi.

Mr. Jones found that microscopic examination of the race in the vicinity of failure (surface spalling) revealed scattered areas of tempered martensite just under (about 0.008 in.) the surface of the spall. Further, these areas of tempered martensite were found

to exist in races which had been subjected to comparatively short test, and the areas then increased in size and frequency as the running time was increased to failure.

The theory proposed by Mr. Jones to account for this phenomena is based on the effects of the three-dimensional stress system acting on an elementary subsurface particle to produce shearing stresses and strains. The energy required to produce these strains is stored in the material in the form of shear strain energy. Not all of this energy is recovered when the load producing the deformation is removed. Because of the internal friction of the material, a certain amount of the energy of deformation is transformed into heat.

Although each successive application of load is of a different magnitude, and hence a particle below the surface of the raceway is subjected to different magnitudes of stress at each load application, there is obviously some point beneath the surface of the raceway which, during the operating cycle of the bearing, has been subjected to the greatest amount of shear strain energy and hence to the greatest amount of heat. At



ASTM officials who helped make the meeting a success and an honored guest shown in this photograph are: (seated, left to right): R. L. Templin, assistant director of research and chief engineer of tests, Aluminum Co. of America, New Kensington, Pa., newly elected vice-president of ASTM; and C. Lipson, Chrysler Corp., and president, SESA. (Standing, left to right): T. A. Boyd, head, fuel department, research laboratories, General Motors Corp., Detroit, vice-president, ASTM; J. J. Shuman, inspecting engineer, Jones & Laughlin Steel Corp., Pittsburgh, awarded honorary ASTM membership; and C. L. Warwick, executive secretary, ASTM.

this point the temperatures produced will be the highest, and it is reasonable to expect that tempering of the hard martensitic structure will first occur at this point. Continued application of load, which is analogous to the production of further heat, will cause the area of tempering to spread, and, since the ultimate strength of the material bears a definite relation to the hardness, and the hardness in turn is reduced by the continual application of heat, the effect of continued running is to reduce the hardness and strength

of the material that it can no longer support the stresses imposed, and failure occurs.

In further support of his theory, Mr. Jones pointed out that the location of the center of the tempered martensite patches coincides very closely with the point of maximum shear strain energy obtained by integration of the complete cycle of loading of the rotating inner race.

This theory, backed by experimental data, is of vital importance to the manufacturer and user of bearings because now the problem of fatigue failure is being considered from the standpoint of the bearing material itself—its metallurgical structure and the effects of performance on this structure. It is certain that much more will be said on this subject in the future, as evidenced by the interest aroused at the session. Conclusion of the presentation of the paper was a signal for an extended discussion of the pros and cons. Based on the proposed theory, it was suggested that failure could be postponed by removing the heat more rapidly. Also, one engineer was so carried away by his enthusiasm as to suggest re-heat treatment of the bearing after intervals of use so as to restore the original martensitic structure. Another mechanism for failure was suggested based on the fact that martensite has an extremely low density and when tempered, the density increases. This would tend to upset the already complicated stress system so as to cause failure.

Effects of Temperature on Physical Properties

THE compressive properties of aluminum alloy sheet are of particular interest in the aircraft industry and in other fields where design of structures requires consideration of buckling. Techniques have been developed for compression testing of sheet materials at room temperature, but little attention has been given to elevated temperature compressive properties.

To overcome this deficiency, A. E. Flanagan, L. F. Tedsen and J. E. Dorn, research engineer, engineer, and associate professor, respectively, University of California, describe apparatus developed for use in short-time compression tests and present results obtained on five high-strength aluminum alloy sheet

DUDLEY Award Medalist, H. R. Copson, Research Chemist, International Nickel Co., Bayonne, N. J.



materials at temperatures up to 300°F, in a paper entitled "Compressive Properties of Aluminum Alloy Sheet at Elevated Temperatures."

The alloys tested were classified as (1) group A, naturally aged 24S-T, a precipitation-hardenable alloy which had been solution heat treated and aged at room temperature, and (2) group B, artificially aged 24S-T81, 24S-T86, 75S-T and A301-T (clad), precipitation-hardenable alloys which had been solution heat treated and aged at elevated temperatures. The heat treatments for these materials are listed in table I.

Comparison of the compressive data with tensile results previously obtained indicates that the values of tensile and compressive yield stress respond in similar manner to elevated-temperature exposure. An equation was derived whereby the approximate values of compressive yield stress could be calculated based on compressive properties at room temperature and elevated temperature tension properties.

Of the materials tested, it was found that 24S-T86 and 24S-T81 offer the best possibilities for elevated temperature service, judged solely on the basis of compressive properties. The behavior of R301-T was found similar to that of 24S-T81 but its loss of strength is more rapid at 300°F. After sufficiently long exposure 24S-T may approach or exceed the strength of these materials, but until fully aged it is lower in strength and may be more susceptible to corrosion. At the lower temperatures 75S-T exhibited superior properties but showed a rapid loss in strength at 300°F.

A discussion of light weight materials that will operate at elevated temperatures (particularly for aircraft) is never complete without proponents of aluminum giving some ground to the "magnesium clan." In line with this trend, A. A. Moore and J. C. McDonald, of The Dow Chemical Co., Midland, Mich., reported results of "Tensile and Creep Strengths of Some Magnesium-Base Alloys at Elevated Temperature," in which creep tests were conducted on various magnesium alloy castings, forgings, extrusions and sheets, at temperatures up to 300°F. Three types of tests were made: short-time tension tests and two forms of creep tests differing mainly in accuracy in strain measurements.

In general, test results showed that at 95°F the stress-to-rupture (under creep-loading conditions) is above the yield strength for nearly all the alloys and is almost as high as the tensile strength for many of them. Sand castings deform but a small amount in 1000 hr at the yield strength. Data presented for one wrought alloy—1.5 pct Mn, rem. Mg—which is the lowest of the commercial wrought alloys in respect to static properties, showed that the limiting stresses for creep conditions appear to be lower than the yield strength.

From the tests at 200°F, it was found that sand castings may deform 1 pct in creep in 1000 hr at the

Table I
Standard Heat Treatments for Materials Tested

Group	Material	Heat Treatment
A	24S-T	24S alloy solution heat treated at 910° to 930°F followed by quenching in cold water and aging at room temperature.
B	24S-T81	24S-T stretched 1 pct and aged 10 hr at 375°F or 12 hr at 365°F.
B	24S-T86	24S-T strain hardened by rolling to a reduction of about 5½ pct and aged 5½ hr at 375°F or 8½ hr at 365°F.
B	R301-T	R301 alloy solution heat treated at 930° to 950°F followed by quenching in cold water and aging 6 hr at 350°F or 18 hr at 320°F.
B	75S-T	75S alloy solution heat treated at 860 to 930°F followed by quenching in cold water and aging 24 hr at 250°F.

yield strength, with the rupture values for castings probably above the yield strength.

At 250° and 300°F, the yield strength appears to be higher than the stress-to-rupture, except for the cerium-containing alloys—a casting alloy containing 10 pct Ce and a forging type containing 2 pct Ce, 2 pct Mn—for which yield strength is the limiting design factor. The wrought 1.5 pct Mn alloy referred to above showed the best creep properties of the commercial alloys.

The loss of ductility, often observed in other materials under these conditions, has not been observed in magnesium-base alloys, and when rupture does occur after long periods of loading, the failure is of a ductile nature and complete failure will not occur without a large deformation.

Predicting Metal Failure

IF a piece of metal has been previously loaded beyond the elastic range so that plastic deformation has taken place, the change in total core losses caused by a certain change in stress will be markedly different than the change for the same piece of metal if previous loading has not exceeded the elastic range. This is true whatever the rate of previous plastic deformation.

Based on this premise, P. E. Cavanagh, research fellow, Ontario Research Foundation and consulting metallurgist, Allen B. DuMont Laboratories, Inc., Passaic, N. J., described "A Method for Predicting Failure of Metals."

Preliminary testing performed on mine-hoist cable has been the first practical application of this method, although the usefulness of this method will certainly be extended following more intensive investigation. In the case of the mine-hoist cable, failure of any of the strands causes the resulting strands to be subjected to increased stresses. This causes the Cyclograph to record these changes, which changes become more drastic as the test proceeds.

New Equipment...

Machine Tools

Recent developments in milling machines, grinders, horizontal broaches, boring machines, and a wet belt surfacer are described in the following pages. Automatic bar machines, shapers, drill presses, lathes, and various accessories are a few of the other tools included in the digest.

RECENTLY introduced by the G. A. Gray Co., 3608 Woodburn Ave., Cincinnati, is a traveling head type milling machine with a horizontal spindle. The spindle runs in double opposed, preloaded, precision Timken bearings and is driven by a drive sleeve at a point close to the cutter, thus reducing the length of spindle subjected to torsion. A 50-hp adjustable speed direct current motor drives the spindle at a speed ranging from 20 to 300 rpm. A positioning device sets the column and head within 0.00025 in. by simply pressing a

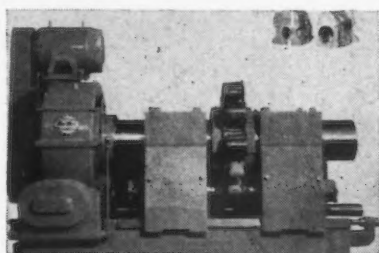


micro-jog button on the pendant switch. Push buttons on the pendant switch also control the spindle, and the 1/2 to 60-ipm feed and variable rapid traverse movements of the head and column. Overload protection for the spindle insures stoppage of the feed motor before the spindle motor stops. The machine illustrated can be furnished with the column fitted to a saddle having cross ways perpendicular to, as well as along the runway at the feed rate or by power rapid traverse.

Continuous Milling Machines

FOR the continuous milling of the parallel faces of transmission cases, the No. 2-B Rolo-Matic miller has been designed by the Davis & Thompson Co., 6411 W.

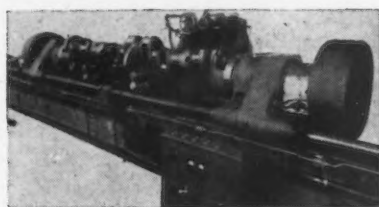
Burnham St., Milwaukee 14. Work pieces are automatically clamped through the roughing cutters and



through the finishing cutters successively. After a rotation of the work drum, milling operations are completed. The fixture drum has 12 stations insuring a continuous flow of pieces through the cutters. Both heads of the machine are movable on the ways and speeds and feeds are controlled through change gears. Cutter speeds range from 50 to 400 fpm, with cutter heads driven by a train of helical gears and a set of V belts from the main drive 20-hp motors. Gross production of the machine is said to be 126 per hr.

Crankpin Grinder

WITH the development of the 40 x 216-in. Type B hydraulic crankpin grinder by the Landis Tool Co., Waynesboro, Pa., it is said to be possible to grind pins and main bearings of large marine and locomotive diesel en-

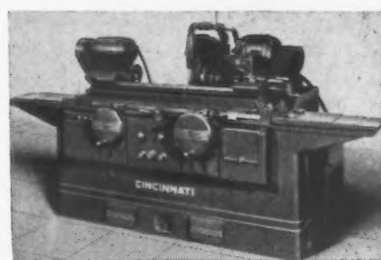


gine crankshafts accurately and on a high production basis. Basically, the machine is a Type B Plain, featuring hydraulic work table tra-

verse, end wheel spindle drive through multiple V belts and rapid electric wheel head cross movement mechanism. The work heads and drive have been designed especially for handling exceedingly large crankshafts. The dual work drive arrangement eliminates or minimizes objectionable torsion deflection in the crankshaft and the work drive motors are synchronized electrically. A shoulder grinding attachment is supplied to grind crankshaft cheeks. This is not intended merely for slight truing up of the cheeks but for the rapid removal of as much metal as might be required.

External Grinder

A LINE of four precision center-type plain grinding machines has been introduced by Cincinnati

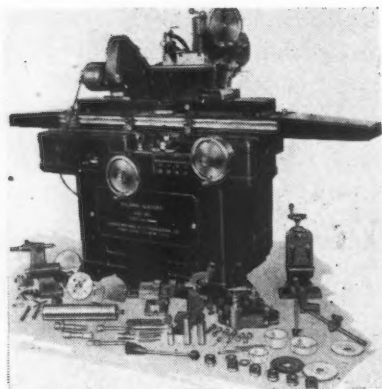


Grinders, Inc., Cincinnati 9. Grinding wheel spindles run on Filmatic bearings. Tables are traversed hydraulically by means of an externally mounted motor driven pump unit which obtains hydraulic oil from a reservoir cast in the machine bed. Table traverse rates may be infinitely varied from 3 ipm to more than 200 ipm, through knob control. Length of table traverse may be automatically dog controlled from the full rate stroke to as short as 3/32 in. Tarry at each end of the table stroke may be independently adjusted from 0 to 5 sec. Two of the four machines an-

nounced are light types, having the extra swing capacity to accommodate a flange or projecting arm on the work.

Tool Grinder

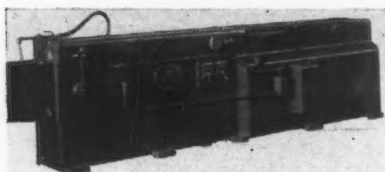
DEVELOPED by *Gallmeyer & Livingston Co.*, Grand Rapids 4, Mich., a hydraulic feed universal



and tool grinder has been produced in two models, No. 70 and 80. They are identical grinders except that the size of the table of the No. 80 machine is 6x50 in., and the amount of longitudinal table movement 32 in., while No. 70 is equipped with a 6 x 42-in. table and has 24 in. of longitudinal table movement. Both models are heavy, rugged machines with the hydraulic longitudinal table movement providing speed ranging from 4 ipm to 50 fpm which is controlled by a lever located on the front of the grinder. A hand wheel provides ease of movement for jobs on which the hydraulic table movement cannot be used advantageously. A four-speed motor drive headstock providing for work speeds of 80, 160, 260, and 525 rpm is standard equipment. The hydraulic mechanism and the motor are housed within the base of the machine.

Horizontal Broaching Machine

SUITABLE for heavy duty internal broaching operations, as well as many surface broaching ap-

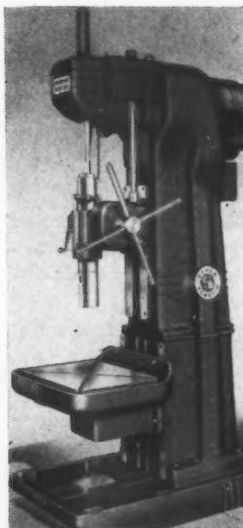


plications, a horizontal broaching machine has been offered by *American Broach & Machine Co.*, Ann Arbor, Mich. Incorporated in the type HD-horizontal machine is a

bed of rolled wall construction which forms double walls throughout the bed and lends strength and rigidity to the base. The machine is made in two standard sizes, Model HD-15-66 having a pull capacity of 15 tons and Model HD-20-66 with a 20-ton pull capacity. Maximum stroke for the machines is 66 in. with maximum broach length of 72 in.

Upright Drill

DESIGNED especially for high production industries, a line of direct drive upright drilling machines has been announced by the *Cincinnati Bickford Tool Co.*, 3232 Forrer St., Cincinnati 9. These machines, built in 21, 24 and 28-in. sizes, have driving motors from 3 to 10 hp, with speeds of 1200 rpm. Lower or higher spindle speeds are provided by a 900 or 1800 rpm motor. The motors have magnetic re-

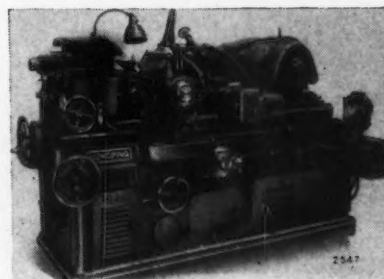


versing starters unless no tapping or spindle reverse is contemplated. Sixteen speeds and 8 feeds can be obtained in relatively short time by rearranging the numbered pick-off gears on the lettered shafts. Adjustable automatic tapping reverse arrangement for production tapping is available. Spindle and sleeve are counterbalanced for easy operation by a weight inside the column. When drill heads are to be used removable sectional weights are furnished to facilitate the balancing of the drill heads. These machines are also built in 2, 3 or 4-spindle gang drill construction.

Swedish Centerless Grinders

CENTERLESS grinding machines manufactured by Lidkoping Nekaniska Verstads A. B.

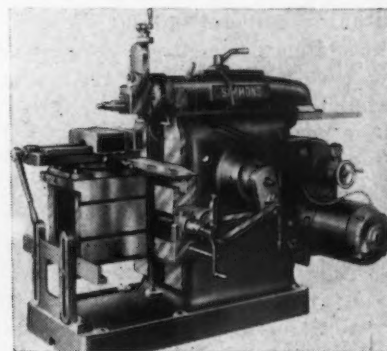
and announced by the *Triplex Machine Tool Corp.*, 125 Barclay St., New York 7, are said to be capable of grinding several diameters simultaneously by means of a form wheel. The grinders are of heavy construction and have both grinding and regulating wheel spindles supported by bearings on both sides of the wheels. A through-



feed speed of 100 fpm and stock removal of 100 lb per hr have been obtained in the grinding of steel shafts. They can be used for through-feed grinding and for in-feed (plunge-cut) grinding. A variety of attachments is available for profile grinding, feeding of short pieces, grinding of bars and tubes, twist drills, etc. Horsepower rating of the grinding spindle drive motors of the several models range from 15 to 90 hp, with the grinding wheels sized from 16 in. diam x 6 3/4 in. wide to 30 in. diam x 16 in. wide.

Micro-Speed Shaper

INCORPORATING a variable speed drive which gives unlimited range of speeds to the ram at the turn of a handwheel, a 20-in. shaper has been announced by the *Simmons Machine Tool Corp.*,

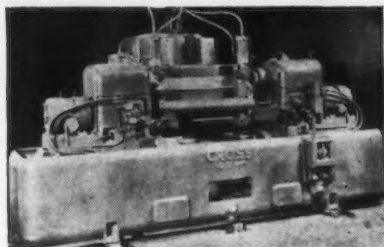


Albany, 1, N. Y. The extreme length of the ram stroke is 20 3/4 in. Horizontal travel is 23 in., vertical travel is 16 1/2 in. and the maximum distance, table to ram, is 16 1/2 in. The bull gear bearing is carried on a convex side wall for better resistance to thrust loads and equal stress

distribution to the frame. The clutch is of the dry multiple-disk type. A fine feed range of 0.006 in. for finishing cuts and 0.080 in. for roughing cuts is available. All gears in the driving train are helical for smooth and quiet operation. The heavy-duty vise with hardened steel jaws, supplied as standard equipment, swivels through 360°.

Facing and Centering Machine

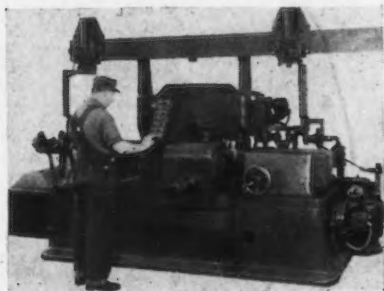
FOR facing and centering shafts in sizes from 1¼ to 6 in. diam. x 9 to 48 in. long, a universal ma-



chine has been made by the Cross Co., 3250 Bellevue Ave., Detroit 7. In this design, cutting rigidity is attained by supporting both the work, regardless of length, and the cutters at the point of cut. The machine operates in a full automatic cycle controlled by push button; the shafts, rolled on loading rails into the clamping jaws and hydraulically clamped on each end, are fed up to mill both ends; carbide cutters retract and the work lowers for centering and unloading. It is said 50 average shafts can be faced and centered on both ends in 1 hr. The hydraulic feeding and traversing heads connected with the work clamps are easily positioned to change from one size shaft to another, with average changeover time being 10 min.

Crankshaft Lathe

DESIGNED for all turning prior to hardening or finish grinding on main line bearings and

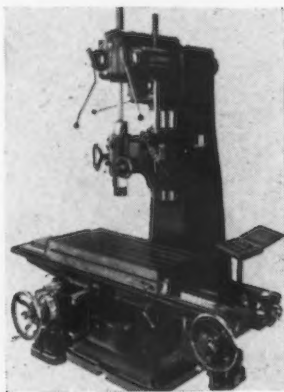


ends of automotive and similar crankshafts, a combination model CH-4 automatic rough and finish

turning, center drive-type crankshaft lathe has been announced by Wickes Brothers, Saginaw, Mich. This machine is equipped with hydraulic feed and is completely automatic in operation, rough turning the main line bearings first with divided tools both front and rear and then automatically shifting the finishing tools into position and finish turning complete with divided tools both front and rear. One operation of chucking, locating and handling of the crankshaft is therefore eliminated. A power operated loading and unloading device is provided. The machine is also equipped with synchronized variable speed and feed mechanism to maintain both the surface speed and tool feed at the maximum permissible throughout the entire cycle. The weight with electrical equipment is approximately 30,000 lb.

Jig Borer

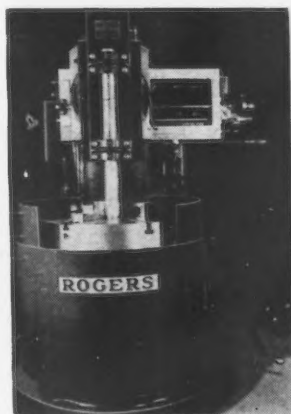
THE Master Model 1836 jig borer has been announced by the Cleereman Machine Tool Co., Green Bay, Wis. This new model, incorporating important changes



in engineering and design, has a quill now made from nitralloy, a spindle quill upper bearing closure, and a new clutch of fine tooth serrated construction instead of the sliding key construction previously used. Rapid traverse is by means of a vertically mounted motor driving an Allen-Bradley electrical plugging switch for braking purposes. The dial depth gage stop is now cast integral with the quill bearing cap and not bolted in place as was done formerly. All important castings are Meehanite instead of semisteel. Other changes have been made in the cross spindle, table, saddle and base. Lead screws have been increased in diameter and are now totally enclosed to protect them from dirt and chips.

Boring Mill

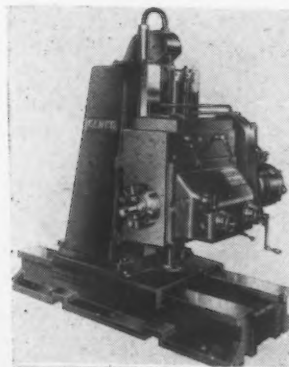
DESIGNED to perform a difficult boring operation, a special boring mill has been developed by the Rogers Machine Works, Inc., 1807 Elmwood Ave., Buffalo



7. This mill is a modified standard Perfect 36 vertical turret mill. The extra heavy bar arrangement and 3-jaw combination chuck are for single-operation work not requiring a turret.

Boring and Facing Machine

INNUMERABLE applications of the boring and facing machine, produced by the General Engineering Co., St. Louis 4, are said to be found in boring, facing, back-facing, drilling and tapping operations on surfaces of heavy cumbersome work pieces. The unusual mounting of the spindle housing provides for greater rigidity, which is obtained because the spindle housing is advanced toward the work piece. This construction, by

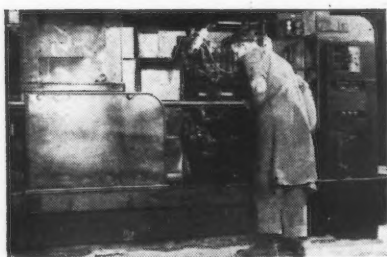


avoiding long overhang, is said to reduce vibration, increase permissible feed and depth of cut, and assure machining to very close limits. The machine may be used either as a stationary or as a portable unit. A retractable spindle sup-

ported by a fixed quill in the spindle housing is offered for drilling operations. The machine can also be modified and provided with automatic feed mechanism, to be used as a milling machine.

Automatic Bar Machines

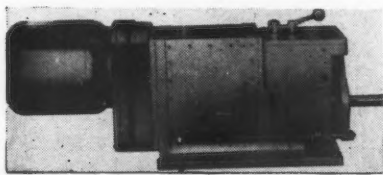
FIVE-SPINDLE automatic bar machines, in 1 $\frac{3}{4}$ in. and 2 $\frac{1}{4}$ in. models, have been offered by *Warner & Swasey Co.*, 5704 Carnegie



Ave., Cleveland 3. The length of feed strokes is mechanically controlled by a quadrant linkage combination which eliminates the necessity for interchangeable cams. Simple sliding adjustments, requiring only minutes to make, set all working strokes from 0 to maximum while retaining unaltered the full fast approach stroke. A wide range of spindle speeds is provided by eight sets of pick-off gears and a high-low shift. Tools are interchangeable in all tool positions. Drilling may be done at all five stations; tapping, threading and reaming are available at three stations. Harmonic motion assures rapid yet shockless bar stock feeding, with an 18-speed transmission controlling the rate of feed of all tools.

Multiple-Purpose Unit

A UNIT for drilling, reaming, counterboring and spotfacing, said to facilitate increased production at reduced cost, has been developed by the *Hole Engineering*

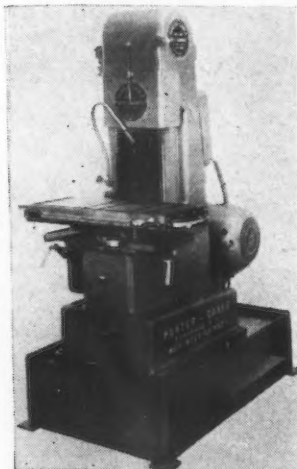


Service, 13722 Linwood Ave., Detroit 6. This unit, called the Hesco Unit Model 100, is of completely mechanical construction and provides positive feed rates which es-

tablish fixed production control. The Hesco is compact in design with long feed stroke, and permits close grouping in multiple installations for unison or sequence operations. It can be mounted in any angle or plane. The lead screw feed provides control of chip per flute, with cold or warm unit. This machine is available in either belt or motor drive type.

Wet Belt Surfacers

A WET belt surfacer, Model BG-8, which surfaces, grinds and removes stock, has been announced by the *Porter-Cable Machine Co.*, Syracuse, N. Y. It is said to eliminate warpage, discoloration and burrs. The new surfacer is equipped with a larger capacity recirculating tank. The coolant, applied to work and belt with a spray nozzle, maintains the work in constantly cool condition. The depth of the machine is 48 in. and the work table measures 38 in. The

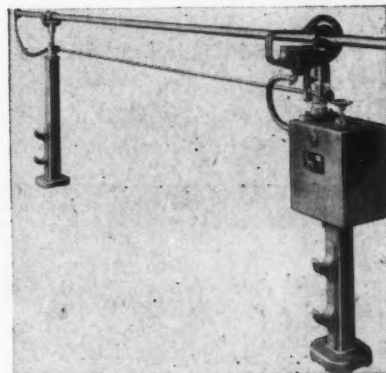


automatic feed table assures a tolerance accuracy of 0.0005 in., controls the in-feed pressure and speed, reduces operator fatigue by substituting mechanical pressure for hand pressure. A flat, hardened steel platen is used to back the belt during the grinding operation.

Pneumatic Bar Feed

ADDITIONAL sizes with new assembly designs of the pneumatic bar feed have been added to the line manufactured by *Lipe-Rollway Corp.*, Syracuse, N. Y. It is claimed for these units that the output of screw machines and turret lathes is increased on an average of 20 pct, as against the hand-fed machines equipped with feed fingers. The improved bar feeds

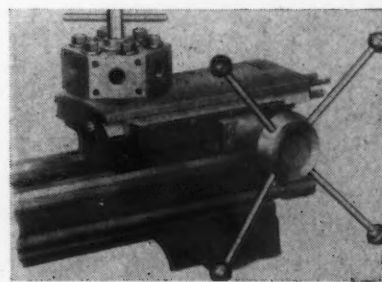
for Brown & Sharpe automatics and small hand screw machines are now furnished with smaller floor base and the control cabinet has been moved to the forward end of the feed cylinder, adjacent to the machine, where the operator can make necessary adjustment with-



out leaving his normal working position. Model 68 for the hand screw machine has a $\frac{1}{2}$ -in. diam x 12-ft capacity, and Model 100, $\frac{3}{4}$ -in. diam x 12 ft. A larger size, Model 500, has 4-in. diam capacity. Models for the B & S automatics range in capacity from $\frac{3}{8}$ to 1 $\frac{1}{4}$ -in. diam x 12 ft.

Bed Turret

KNOWN as the Hexturret, a bed turret for lathes up to 14-in. swing, which has been announced by the *Enco Mfg. Co.*, 4520 Fullerton Ave., Chicago, uses double steel drive gears and double racks for equalizing the feed of the tool on the work. This twin drive also keeps the turret in perfect alignment, it is said, and minimizes



wear. Versatility of the turret is said to be increased by the Hex turret head which permits mounting flanged tools and tool holders. Other features include clearance of the lathe saddle wing for work close to headstock; a safety clamp to prevent crawling of the turret, and hardened stop screws.

DISTRIBUTORS

NEW ENGLAND

Hartford 2, Conn. . . . Arcos Corporation

MIDDLE ATLANTIC

Buffalo, N. Y. . . . Root, Neal & Co.

Erie, Penna. . . . Boyd Welding Co.

New York, N. Y.,

Arcos Corp., Phila. 2, Penna.

New Jersey,

Arcos Corp., Phila. 2, Penna.

Philadelphia, Pa. . . Arcos Corporation

Pittsburgh, Pa. . . Williams & Co., Inc.

Rochester, N. Y. . . Welding Supply Co.

Syracuse, N. Y. . . Welding Supply Co.

SOUTH and SOUTHWEST

Baton Rouge 17, La.,

Louisiana Welding Co.

Borger, Texas,

Hart Industrial Supply Co.

Houston, Texas,

Champion River Co. of Texas

Kingsport, Tenn.,

Slip-Not Belting Corp.

Knoxville, Tenn.,

Slip-Not Belting Corp.

Albuquerque, N. Mex.,

Industrial Supply Co.

New Orleans, La.,

The Gulf Welding Equip. Co.

Oklahoma City, Okla.,

Hart Industrial Supply Co.

Pampa, Texas,

Hart Industrial Supply Co.

Phoenix, Ariz. . . Arizona Welding Co.

Tucson, Ariz. . . Arizona Welding Co.

Tulsa, Oklahoma,

Hart Industrial Supply Co.

MIDDLE WEST

Chicago, Ill.,

Machinery & Welder Corp.

Cincinnati, Ohio . Williams & Co., Inc.

Cleveland, Ohio . Williams & Co., Inc.

Columbus, Ohio . Williams & Co., Inc.

Detroit, Mich., C. E. Philips & Co., Inc.

Fl. Wayne, Ind.,

Wayne Welding Sup. Co., Inc.

Indianapolis 2, Ind., Sutton-Garten Co.

Kansas City, Mo.,

Welders Supply & Repair Co.

Milwaukee, Wis.,

Machinery & Welder Corp.

Minneapolis, Minn.,

Machinery & Welder Corp.

Moline, Ill., Machinery & Welder Corp.

St. Louis, Mo.,

Machinery & Welder Corp.

Toledo 2, Ohio, Williams & Co., Inc.

Wichita, Kansas. . . . Watkins, Inc.

WEST COAST

Bakersfield, Calif. . . Victor Equip. Co.

Fresno, Calif. . . . Victor Equip. Co.

Los Angeles, Calif. . Victor Equip. Co.

Portland, Ore., J. E. Haseltine & Co.

San Diego, Calif. . . Victor Equip. Co.

San Francisco, Calif., Victor Equip. Co.

Seattle, Wash. . . J. E. Haseltine & Co.

Spokane, Wash. . J. E. Haseltine & Co.

Tacoma, Wash. . . J. E. Haseltine & Co.

FOREIGN

Honolulu, Hawaii,

Hawaiian Gas Products, Ltd.

Monterrey, N. L. Mexico,

Electrodos Monterrey, S. A.

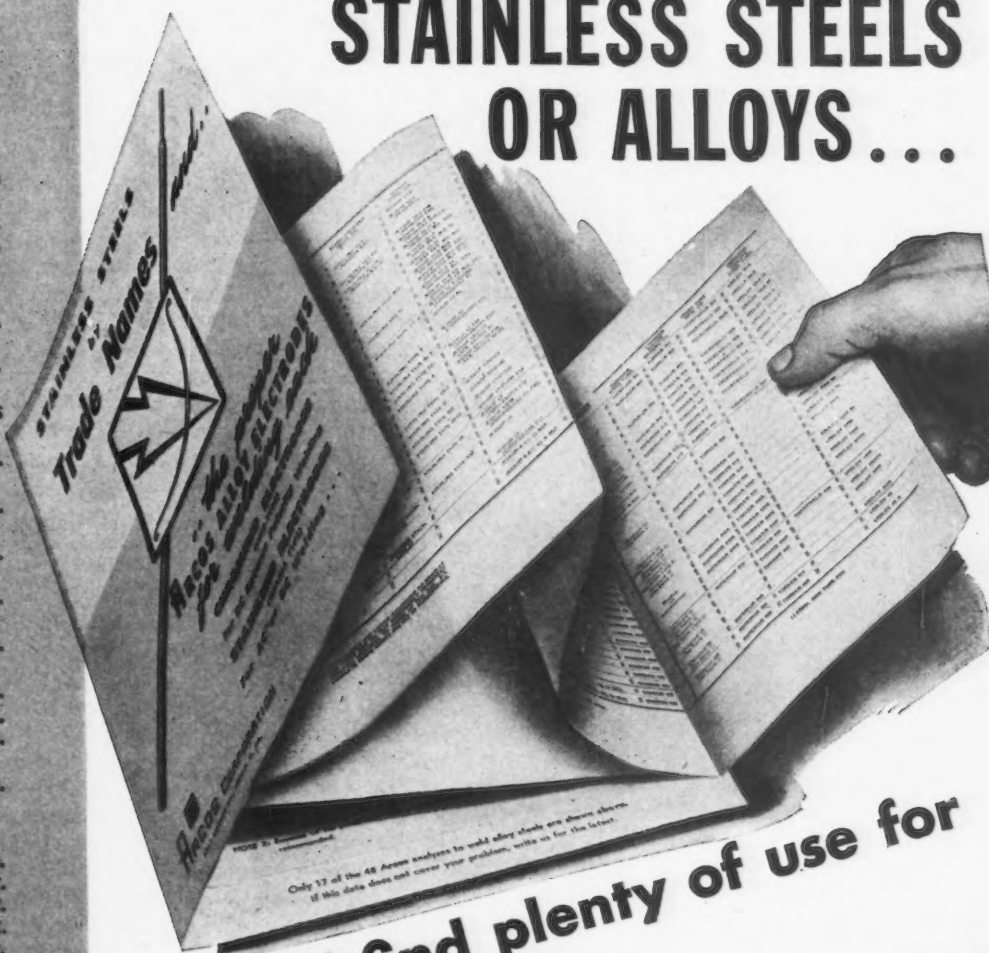
Montreal, Canada,

G. D. Peters & Co. of Canada, Ltd.

Chile, Bolivia, Peru,

W. R. Grace Company

If you weld STAINLESS STEELS OR ALLOYS...



you will find plenty of use for
this new ARCOS
**TRADE NAMES
CHART**

**—it tells which ARCOS ELECTRODE
for each ALLOY STEEL!**

Here are the trade names of 519 high alloy steels made by 25 alloy steel producers, and the proper Arcos Electrode to weld each.

A copy will be sent upon request on your company letterhead, addressed to Arcos Corporation, or to your Arcos Distributor.

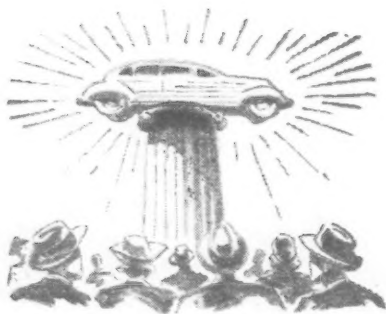


ARCOS CORPORATION • 304 GULF BUILDING, PHILA. 2, PA.

Assembly Line

WALTER G. PATTON

• Prospect for automobile production in July brighter . . . Industry not expected to launch drive for advances in car prices . . . Passenger car tire output climbing.



DETROIT—Looking only at the month of July, prospects for the automobile industry appear brighter than at any time during the past few months. With major strikes behind them automobile producers are hopefully visualizing production schedules that will result in assembling 325,000 cars and trucks in the United States and Canada next month, an increase of 125,000 units over the estimated total for June.

Despite critical shortages of parts and materials resulting from labor troubles in automotive plants and those of suppliers, it is estimated by Ward's that automobile output during the first half of this year will be approximately 1,045,000 units. During the same period of 1941 which was the last year of civilian production, the industry produced 3,148,800 cars and trucks in United States and Canadian plants. To attain 3 million units this year, car manufacturers must during the next six months double their output for the first half of 1946. This represents an average production rate of about 325,000 units per month which is also the projected output for July. Little hope is seen here that such a rate of production can be maintained and this explains why an estimate of 2 million cars and trucks to be produced in 1946 is much easier to justify than the

more optimistic 3 million forecast.

At the present time, the scarcity of bolts for automotive use is the most serious supply problem confronting the industry. When it is recalled that a passenger car requires approximately 200 bolts per car, it is evident that the bolt shortage can assume serious proportions if the present shortage is not corrected in the near future.

It is not anticipated that the lifting of OPA restrictions will have an immediate effect on the prices of passenger cars and trucks. The automobile industry has already been granted price increases whose net effect has been to raise the delivered price of the lowest priced cars to approximately the \$1200-\$1300 level at Detroit. With the unions strongly opposing price increases and the possible threat of a buyer's strike confronting them, it is quite unlikely that the automobile industry will take the lead in asking for further advances in car prices even though producers are acutely conscious of what *could* happen if parts prices jump sharply during the next few months.

The dependence of the automobile industry on its parts suppliers has been demonstrated many times during recent months and it is undeniably true that the biggest single factor in determining the price of a car today is the amount that must be paid for parts and materials purchased outside the maker's own plant. Under today's operating conditions, with no companies being self-contained in the sense that Ford was self-contained a few years ago, the level of car prices will in the final analysis be largely determined by the productivity and pricing policies of automotive parts suppliers.

The effects of the GM strike and work stoppages in the plants of automotive suppliers is being keenly felt by the tool and die segment of Detroit industry. While there have been only a few strikes in tool and die shops, the limited output of large automobile producers has resulted in unanimous postponement of announcements of new 1947 models by all major producers and some observers see in this omission

the possible elimination of an entire model cycle. Ford and Packard have announced publicly that no new models will be introduced during the current year and other large producers are expected to follow a similar course. Meanwhile, some tool work on 1947 models has already been completed and retooling on late 1947 models and some early 1948 cars will not be placed until late in the third quarter. Taking all factors into consideration, it looks like a dull summer for Detroit's tool and die shops.

TRENDS in automotive engineering and the market for high priced cars were discussed at a joint press conference this week by John F. Gordon, recently appointed general manager of Cadillac Motor Car Co. and D. E. Ahrens, general sales manager.

Speaking particularly for Cadillac and to some extent for the industry as a whole, Mr. Gordon pointed out that the design of more efficient engines which develop about the same hp as the present automotive power plants but with greater economy was a well-established goal of engine designers. Safety considerations, he added, are being given even more consideration than in the past and improved vision for the driver and the adoption of more effective braking systems will undoubtedly come in response to the demand for greater safety on the highways.

In Mr. Gordon's opinion, greater utilization of body space and improved integration in automobile construction are additional features which car owners can anticipate. Widespread adoption of hydraulic transmissions can be expected within a few years, he said. Mr. Gordon declined to comment on the possibilities that torsional springing will be widely adopted by the United States motor car producers.

A natural inference to be drawn from Mr. Ahren's comments on the market for Cadillac cars is that quick generalizations as to the size of the United States market for passenger cars and the productivity of workers in automotive plants is likely to be hazardous. For example,

THE SOLUTION TO BLIND-HOLE TAPPING PROBLEMS



■ The P&W Modified Spiral Point Bottoming Tap is designed for use on automatic screw machines on the particularly tough operation of tapping blind holes—as well as other tapping operations. This tap with its unique modified spiral point—and specially designed flute—creates fine chips while cutting. These chips are easily ejected,

allowing clearance throughout the cutting operation. This free-cutting action means longer tap-life—lower production costs.

Over a period of years P&W Bottoming Taps have proved to have the necessary tap-stamina to stand up on hour-after-hour schedules of production-tapping. P&W Taps are available in all standard machine screw sizes, for all types of work.

Our tool engineers will gladly help you in choosing the best taps for *your* work. Consult your nearest P&W Branch Office or write on your company letterhead for further information on P&W Taps and other small tools.



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by carefully sampling and processing orders already on hand, Cadillac has found that if it could deliver cars in sufficient volume today, the number of prospective buyers who would cancel their orders would not be significant. Recent price changes, it was said, have not had a noticeable effect on Cadillac's order volume.

At the same time, Messrs. Gordon and Ahrens were careful to point out that buyers of Cadillac cars are usually former Cadillac

produced, according to the Rubber Manufacturers Assn. report. The April output was 3.9 pct higher than in March and brought the total for the first four months of 1946 to 20,115,514 units, more than three times the 6,363,854 units produced in the same period of 1945. The ironical part of this situation is that at this particular moment many prospective tire buyers in the Detroit area are complaining bitterly about their inability to obtain

and are designed to relieve the pressure for new car deliveries which is turning the lives of many Packard dealers into a nightmare. Such ads are being carried by a total list of 1542 dailies and weeklies, an all-time record in the advertising history of Packard Motor Car Co. It is an interesting commentary on our times that Packard's biggest advertising campaign has been launched, not to sell cars, but to explain why Packard *cannot* sell cars.



STYLISH STATION WAGON: This is Chrysler's new 4-door, 6-passenger Town and Country sedan, a modernized version of the station wagon. The front end from bumper to windshield is the same as steel bodied cars of the Chrysler line. From there back to the rear bumper, wood body members and panels are used.

owners and this class of owner is not dependent on wages for income. Similarly, most Cadillac employees have had long service records with the company and the management does not regard employee productivity as a major obstacle to production. The company is losing money at present, he said, while producing at approximately 50 pct of capacity.

The results of the Cadillac survey are in refreshing contrast to stories that are sometimes heard here predicting that the combined effect of higher prices for cars and a falling national purchasing power will be to drop the bottom out of the car market much sooner than most people expect.

THERE is good news for motorists in the announcement that production of passenger car tires is continuing to climb toward an estimated goal of 70 million units for 1946. For instance during the month of April a new peacetime high of 5,514,751 units were pro-

duced, either tires or tubes from their dealer.

Because of the company's plans to increase manufacturing space for Ford and Mercury automobiles at the Rouge plant, Ford buses are now being produced at the Highland Park plant on a newly installed final assembly line. The new bus assembly line is 510 ft long, more than 275 ft longer than the Rouge bus line, and has a capacity of 45 units daily. The Ford truck assembly line is also being moved from the Rouge plant to Highland Park. This line is expected to be in operation by fall.

Packard Motor Car Co. is laying its cards on the table in an effort to tell potential new Clipper owners, through 2000 Packard dealers, exactly why they are not able to obtain delivery on their new cars. The advertising copy which is headlined "Waiting Is Tough On Us, Too" makes no effort at all to sell cars. The advertisements, paid for by the company, are signed by the dealer

Pittsburgh Engineers Win AIEE Contest Awards

Detroit

• • • Top awards of the American Institute of Electrical Engineers for the best papers submitted during the past year on engineering practices and theory and research recently went to two groups of East Pittsburgh engineers.

Announced at the summer meeting of the AIEE here, the award and \$100 prize for the best paper on engineering practice went to Graham L. Moses, L. R. Hill and James DeKiep of the Westinghouse East Pittsburgh division. Their paper dealt with the application of silicones, the new materials that are setting aside old thermal limitations in the insulation field.

A similar award in the theory and research classification went to Dr. G. D. McCann, H. E. Criner and C. E. Warren, also of Westinghouse East Pittsburgh division, for their discussion of the mechanical transient analyzer, an electrical device which helps solve problems of motion, vibration and heat flow so complex that many calculations had formerly been hopeless or too costly in time.

In their paper, Messrs. Moses, Hill and DeKiep reported on several years of research in the application of silicone insulating resins to electrical equipment, and on the basis of their findings, recommended creating a new class of AIEE standards with increased temperature limits for silicone insulated equipment. Messrs. McCann, Criner and Warren explained how their mechanical transient analyzer is based on the analogy between electric circuits and other physical systems.



Here's Your 3-step plan for BETTER TOOLS TO CUT PRODUCTION COSTS

Use this sure way to knock the props from under production costs. Let Carpenter help you put this three-step plan to work in your tool room and heat treating department. With it you can reduce machine down-time and actually lower unit costs.

1. Cut The Cost Of Tooling-Up And Reduce Machine Shut-Downs!

Tool Engineers can now be sure of selecting the proper tool steel for each job when they use the Carpenter Matched Set Method. Many plants use this method of selection to lick production problems caused by premature tool and die failure. And it works! Now tool makers who have used it are relying on it to get every job done right. They know it cuts the cost of tooling-up and reduces machine shut-down time. And those savings are bound to show up in the cost of the finished product.



How the Carpenter Matched Set Method Helps to Solve Your Tool Steel Problems...

These are really Matched Tool Steels, as one picks up its job where the other "leaves off."

The key steel is the one in the center, *No. 11 Special*, a straight carbon, tough timbre, water-hardening tool steel. When you have a tool to make, you first find out if it can be made from *No. 11 Special*. If the answer is "Yes", you go no further. But when the answer is "No", you use the diagram to point the way to the tool steel that will do the job. For greater wear resistance you go north. For greater hardening accuracy and safety, you move west, etc.

To learn more about the ways this method can be used in solving your special problems, ask for a copy of the 167-page Carpenter Matched Tool Steel Manual. It contains an 80-page tool index and steel selector that many tool engineers find extremely handy. For your copy, write us a note on your company letterhead, indicating your title. (Free in U. S. A.)

The Carpenter Steel Company
121 W. Bern St., Reading, Pa.

BRANCHES AT Buffalo, Chicago, Cincinnati, Cleveland, Dayton, Detroit, Hartford, Indianapolis, New York, Philadelphia, Providence, St. Louis

2. Insurance That Each Tool Will Pay-Off On The Job!

As you know, proper heat treatment is the second step to seeing that each tool is made to do its job right. And the Carpenter Heat Treating Guide quickly gives you this important information about each Carpenter Matched Tool Steel: Type analysis, Forging heat, Normalizing heat, Annealing treatment, Hardening treatment and Recommended drawing range. And this slide chart gives you tips on quenching, oxidizing atmospheres, heating time and heating speed for drawing. For your free copy, drop us a note on your company letterhead.

3. Check On Tool Life And Output Per Grind!

Find out which tools and dies need too frequent regrinding or fail prematurely in service. Carpenter Matched Tool Steels can help you lick this condition, and reduce unit costs. And for personal help in your tool room or heat treating department, get in touch with your nearby Carpenter representative. He knows tool steel inside-out, and can often provide the kind of engineering help that licks tough production bugs.



Carpenter
MATCHED
TOOL STEELS

• WAA sells steel and pig iron costing \$23 million for more than \$15½ million . . . Excess profits tax council operates soon.



WASHINGTON — Of the \$57 million worth of steel and pig iron turned over to WAA, approximately \$23 million worth has been disposed of for more than \$15½ million, a return of 70¢ on the dollar as compared with approximately 37¢ average on overall surplus disposals.

As of April 30, WAA said, a total of \$56,948,000 worth of rolled and sheet steel had been acquired by the disposal agency, of which about \$23,144,000 worth had been sold for \$15,626,000. Of the \$25,000 worth of pig iron acquired, \$12,000 worth brought in \$15,000; iron and steel scrap valued at about \$93,000 brought \$100,000 from buyers.

In its May report, WAA revealed that through May 31 the disposal agency has acquired a total of \$17¼ billion surplus property and has disposed of about \$3½ billion. Sales for the month amounted to \$717 million (reported cost) worth of goods for a cash return of \$233 million, more than doubling April disposals.

Aircraft, parts and components account for the greatest single classification of surplus acquired, more than \$7 billion having been acquired against \$600 million in cumulative sales and leases. Government-owned war plants consti-

tute the second largest investment, \$4.2 billion worth having been declared to WAA which had disposed of \$737 million in cash sales and another \$669 million through leases.

WAA, which is charged with about 90 pct of all surplus disposals, accounted for 97 pct of May sales, the report showed. Disposals for May by agency were:

War Assets, \$717 million; U. S. Maritime Commission, \$6 million; Agriculture Dept., \$3 million; Federal Works Agency, \$5 million; Interior Dept., \$8 million.

The accompanying table, compiled by THE IRON AGE, on basis of figures supplied by War Assets Administration, does not include figures for airports which are, roughly: Acquired, \$25,814,000,000; total disposals, \$5,658,000,000; and available for disposal, \$20,156,000,000. Shipyards are included under the category of Plants and Sites:

government war plants, is not likely to be sympathetic to any proposal which would add to its present inventories of less desirable property. Besides, while such procedure would be in line with the general tendency of government bureaus to take on new jobs in order to create perpetuity for themselves, it is scarcely likely to be regarded as carrying out the spirit and letter of the law which created WAA to dispose of excess property rather than to act as a general broker or jobber.

* * *

REP. August H. Andresen, R., Minn., suggests declaring a 30-day or 60-day holiday for the approximately 3,000,000 people on the federal payroll and sending them to work on the farms of America so that they can help produce the food to feed the people of the United States and the world.

WAR ASSETS ACQUISITIONS, DISPOSALS AND INVENTORIES

(In nearest \$ millions, cumulative through May)

Category	Acquired	SALES		On Lease	Inventory
		Reported Cost	Received		
Aircraft, Parts, Etc.	\$ 7,063	\$ 556	\$ 81	\$ 35	\$6,472
Plants and Sites	4,199	732	332	669	2,798
Capital and Producers					
Goods	3,252	732	348	8	2,512
Consumers Goods	2,706	1,088	518	0	1,618
	\$17,220	\$3,108	\$1,279	\$712	\$13,400

Among those recently appearing before a Senate subcommittee to tell what is wrong with WAA was Laurence F. Arnold, whose job with the Commerce Dept. is to look out for the interests of small businesses. Unlike some of the others, Mr. Arnold had specific recommendations for speeding up surplus property disposal.

More war plants could be sold to small business firms, he declared in one statement, if WAA would only relax its rules and permit potential buyers to trade in their old machinery on the new equipment.

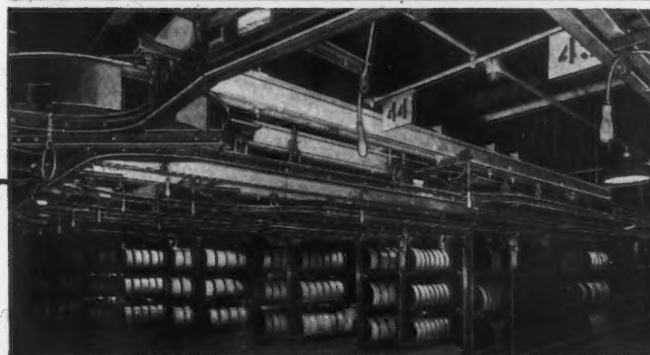
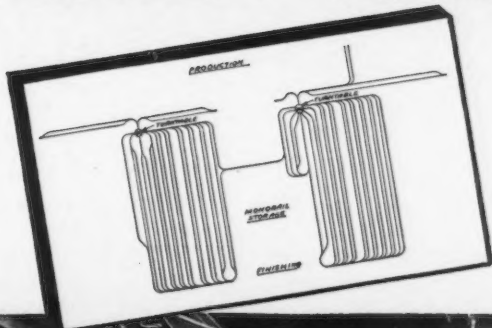
Embattled WAA, while usually receptive to suggestions which will help it dispose of more than 1500

However, Mr. Andresen has some doubts concerning the efficacy of his remedy since he does not think they could "take this kind of hard work very long because most of them have no realization of the hard work and the toil and the long hours that go into the production of food. Most of them think that they can turn on a spigot and get milk."

Rep. John W. Gwynne, R., Iowa, discussing the bungling of OPA and other government agencies sets forth a neat paraphrase on the whole subject of food and other shortages.

"Never have so many been de-

FLEXIBILITY



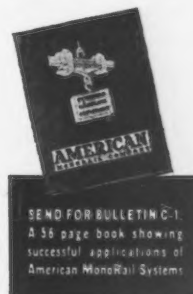
of AMERICAN MONORAIL EQUIPMENT Solves Difficult Handling Problems

Here is another of the hundreds upon hundreds of handling problems efficiently and economically solved by American MonoRail Overhead Handling Equipment.

THE PROBLEM: To eliminate manual handling of reels from production machines to storage, from storage to finishing, from finishing to storage or shipping as required.

THE ANSWER: The **FLEXIBILITY** of American MonoRail switching arrangements permits reels to move on carriers with no rehandling between processes. Ample live storage is allowed, permitting free movement between all processes.

What is your handling problem? American MonoRail Engineers come up with the answer to efficient and economical handling ninety-nine times out of a hundred. We invite your inquiries.



THE AMERICAN MONORAIL COMPANY

13103 ATHENS AVE.

CLEVELAND 7, OHIO

THE IRON AGE, July 4, 1946—87

stroyed by so few in such a short space of time," he quipped.

* * *

THE Excess Profits Tax Council expects to begin active operation within the next few weeks, according to the Bureau of Internal Revenue. The Council is the agency which has been set up within the Bureau to administer claims filed by corporations for reduction of their excess profits taxes under Section 722 of the Internal Revenue Code. The membership is composed of 15 individuals selected for outstanding experience in law, accounting and economics.

Administrative and procedural plans are being developed for early consideration of the Council. Foremost of these is a proposal for the Council to re-examine and attempt settlements without court trial in the approximately 600 cases which are pending in the Tax Court of the United States.

Among other facilities, the Council is expected to have conference groups to attempt settlement of disputed cases, and also a review group to examine cases in which taxpayers and Internal Revenue field agents have reached agreements.

Internal Revenue field offices will continue to handle Section 722 cases as in the past, in an effort to reach agreements with taxpayers in as many instances as possible. However, as soon as the Council begins operations, it will be given jurisdiction over all Section 722 cases now being handled by the Audit Review Div. of the Income Tax Unit in Washington.

* * *

THE War Dept. has begun its postwar ordnance training at its installations and universities throughout the country. At the ordnance school, Aberdeen, Md., the ordnance automotive school, Atlanta, Ga., and the ordnance unit training center, Red River Arsenal, Texarkana, Tex., 1026 enlisted men will receive specialized training. The Ordnance Dept. will train 695 ROTC graduates at approximately 30 universities each year, and a series of ordnance extension courses are being prepared at the ordnance school, according to Brig. Gen. Roswell E. Hardy, Chief of the Ordnance Dept.'s military plans and training service. Also ordnancemen are being sent to other technical schools such as the quartermaster clerks' course at Camp Lee, Va., and

the drafting courses at the engineers' school, Fort Belvoir, Va.

Courses at the ordnance school include ordnance parts clerks; combination welders; watch repair; small arms weapons mechanics; heavy AA director repair track and wheeled vehicles, electricians and mechanics; AA fire control equipment repair; fuel injection system mechanics and machinists.

The automotive school is offering courses for light metalworkers; tire rebuilders; wheel vehicle engine mechanics; carpenters and painters; wheeled vehicle chassis mechanics; leather and canvas workers; automotive inspectors and foremen.

ROTC courses at 13 prewar training schools have been established, and it is contemplated that 17 more universities will offer ordnance courses. Only engineering students are accepted for ordnance ROTC training. Massachusetts Institute of Technology, Cornell University, Lehigh University, Georgia Tech, The Citadel, Purdue University, University of Cincinnati, University of Michigan, University of Oklahoma, Texas A & M, Leland Stanford University, University of California and Louisiana State University are offering ordnance ROTC training. Some universities are already offering interim courses, but the majority will open next fall.

THE BULL OF THE WOODS

BY J. R. WILLIAMS



Polish Coal Output Up

London

••• Polish coal production during March last totaled 4,223,787 tons, according to the British Board of Trade Journal. This figure exceeds the coal output for February by 544,839 tons, but is only 191,349 tons more than the January total.

Official calculations indicate that between 51 and 53 million tons of coal will be produced during 1946, the limiting factors being labor and machinery. Of this total, 11 million tons will be used in the industrial basin and a further 21 millions elsewhere in Poland.

Six million tons will be exported by sea and 10 million by rail to Russia, while 2 million tons will go to Southern Europe. Thus, 50 million tons are already committed, leaving only marginal production for allocation.



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4 When high production gaging instruments like the Multichek, Precisionaire and Visual Gage are used at the machine, the floor space devoted to inspection operations, gage maintenance costs and the labor cost of inspection are all greatly reduced.

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6 Fewer parts will wear out in service, and then replacement is quickly and easily done—no laborious fitting in the field will be necessary.

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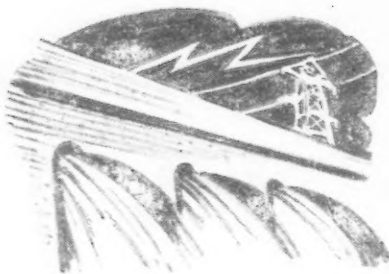
**MACHINE TOOLS...GAGES
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West Coast . . .

ROBERT T. REINHARDT

• WAA steel offering brings out hungry buyers . . . Construction projects increase structural and bar demands . . . Labor jurisdiction next Geneva problem . . . Fishing boats of steel win acceptance.



SAN FRANCISCO—Steel buyers in this area last week proved they are strong believers in the old adage, "A bird in the hand is worth two in the bush," as they stormed the local WAA offices following distribution of the announcement that tons of sheets, structurals, rails and terneplate would be placed on sale July 10 to July 17.

The announcement by Benjamin Fairless that subsidiaries of U. S. Steel Corp. servicing the Pacific Coast have now scheduled deliveries for the balance of the year on allotments in excess of the average shipments in prewar years, came at about the same time as the WAA offering. While Mr. Fairless' statement offered some hope to steel hungry fabricators, the WAA sale promised more immediate, though limited results.

WAA reported that on the first day that announcement of the availability of surplus steel was made, hundreds of would-be-buyers filed orders, with telephone inquiries coming from as far away as New York City. Officials refused to say how many times the material had been over-bought because of the still unraveled mass of priority claimants involved. Federal agencies had until July 10 to file; Veterans of World War II until July

12; RFC small business, state and local governments and nonprofit institutions until July 15; and non-priority groups until July 17. No one expected anything to go beyond the veterans' group.

Included in this sale were the following approximate tonnages: Galvanized and hot-rolled sheets, 500; stainless sheets, 150; terneplate, two; plates, 1000; angles, 35; channels, 70; wide flange beams, 100; railroad rails, 150; tie plates, 11; and railroad track bolts, 12.

Typical prices were: Galvanized sheets, 11 gage, 48 in. by 96 in., \$4.35 cwt; hot-rolled sheets, 12 gage, 60 in. by 120 in., \$3.25 cwt; plates, $\frac{3}{8}$ in., 48 in. by 96 in., \$2.55 cwt. This material was described as "New to good or fair" in the offering list.

Fabricators who have learned to adapt their production methods to aluminum are still being offered substantial quantities of both flat and corrugated sheets through advertisements in local papers. Immediate deliveries are promised.

INDUSTRIAL developments of the San Francisco Bay region and northern California continue to increase over the 1945 level, according to figures just released by the local Chamber of Commerce. May 1946 exceeded the same month last year by \$3 million with 132 new plants and expansions costing \$9,695,618 getting under way. San Francisco had nine new plants and 11 expansions which would provide 153 new jobs. The 12 counties of the Bay area added 57 new plants and 54 expansions; and the 48 counties of northern California started 71 new plants and 61 expansions.

These, and other new construction projects of greater magnitude such as the Central Valley project, are keeping structural mills and bar mills working on three turns without any apparent hope of keeping up with demand. Producers are not bidding in many instances and repeated calls are often made before a supplier is found.

The tendency of the local Civilian Production Administration office to bear down harder on construction projects as a whole to funnel short supplies into home building, thus

far seems to have but little effect in easing the steel situation in heavy construction.

LOS ANGELES—Northrop Aircraft, Inc. has entered the light metals fabrication field in addition to its regular aircraft construction. Northrop Foundry, Inc., a subsidiary, has announced an aluminum alloy shower base. Claimed to be a lifetime fixture, it is a one-piece sand mold casting, finished in crackle enamel baked on during the manufacturing process. This same company is also making high grade aluminum castings for use in the automobile, oil, shipbuilding, aircraft, appliances and similar industries.

Installation of the shower base is said to take about 30 min. Produced in a standard size, the light-weight casting is easy to ship and is claimed to be slip-proof and leak-proof. Supplied in various colors it can be matched with almost any color scheme.

Twenty-two new factories and expansion of 34 existing plants were started here in May with an investment of more than \$11 million.

One of the manufacturers starting production in this area is the Kerotest Mfg. Co. with headquarters in Pittsburgh. This company acquired the valve div. of the Security Engineering Co. at Whittier, Cal., and will manufacture forged and cast steel valves for marine and industrial use. The former Bergstrom Steel plant on Slausen Ave. has been purchased and is being remodeled and doubled in size. Part of these facilities will be occupied by Kilsby & Harmon, Inc., pipe processors.

Three new steel warehouses are being planned by Dulien Steel Products, Inc. of this city for the stocking of both ferrous and nonferrous metals. Each building is to be 60 ft by 200 ft and the total cost is estimated at \$150,000. The first unit is scheduled for completion in August.

THE expressed hope of Henry J. Kaiser that his Fontana steel plant would become the nucleus for an industrial development based on the productivity of the plant ap-

Interpreter

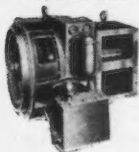
OF THE ISOPLETHS



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parently is taking material form. It has been announced that the Mineral Wool Insulations Co. has begun construction of a \$100,000 plant on property leased from the Kaiser interests adjacent to the steel plant for the production of insulation from blast furnace slag and coke. Rated capacity of the plant is said to be 50,000 tons per year with initial capacity set at 20,000 tons.

Resembling lamb's wool, the insulation will be made by a process acquired by American technicians from Germany and will be used in the form of baked batts, paper wrapped blankets and granulated wool for the building industry.

President of the new company is Harvey H. Head, formerly in the by-products div. of Kaiser Co., Inc. Other officers are: Charles W. Hawthorne, previously with Johns-Manville Co., vice-president and chief engineer; Richard L. Gray, Los Angeles attorney, secretary; and C. T. Sauers, formerly with W. A. Bechtel Co., treasurer.

Offices will be maintained in Los Angeles and San Francisco.

* * *

SALT LAKE CITY—It is expected that since Geneva has been sold to U. S. Steel Corp. and is slated for full production as soon as possible, the already bitter struggle between AFL and CIO for bargaining rights will be considerably intensified.

The AFL has represented the employees with an industrial type unit set up through the Metal Trades Council. Last winter the CIO petitioned for a new election and was opposed by the AFL which contended that only a skeleton crew was at work and that any new election should await disposal of the

plant and the employment of a full crew. The NLRB disregarded this plea and ordered the election which resulted in the CIO taking the lead, AFL second place and the Association of Machinists, which was under suspension by AFL, ran third. In the runoff voting the machinists switched their votes to AFL and that union won by a scant margin of 266 to 264. However, four ballots were challenged and they presented such a delicate problem that the NLRB examiners passed them on to the regional office in San Francisco for a ruling. Two of the four ballots were challenged on a question of eligibility to vote. They were marked for the CIO and, if allowed, would even the count. The other two were challenged as to markings. Thus the final result may rest in the rulings on these two ballots.

Nothing definite has been heard locally as to the place in the corporate family Geneva will have. Interim operations are apparently to continue under the Geneva Steel Co. with J. L. Waggoner as general superintendent. He came to Geneva from Carnegie-Illinois and was superintendent of raw materials until Peer Neilsen left for Fontana, when he became acting general superintendent.

What will happen to the blast furnace operations at Ironton has not as yet been announced, but it is evident that they cannot be closed down until Geneva gets its blast furnaces into operation and supplies the gas and pig iron already contracted for by the Columbia plant. It is considered likely that a pipeline will be run from the Geneva coke ovens to the communities which have been served from Ironton.

One auxiliary part of the Geneva

setup which has not as yet been disposed of is the town of Dragerton, built by RFC to house workers for the Geneva coal mine in Horse Canyon. It is understood that the corporation's policy is against ownership of "mill town," but in this case no other housing is available and operation of the project may be necessary. About 600 homes remain and about 100 of these are now vacant.

* * *

SEATTLE—A metal fishing boat of advanced design was launched last week by the N. C. Janssen Drilling & Mfg. Co. The new ship incorporates a 4-in. tubular steel keel and a similar tube runs laterally around the inside of the hull to which the plates are welded. The tubes, instead of the plates, are said to take up the stress and shock of collision.

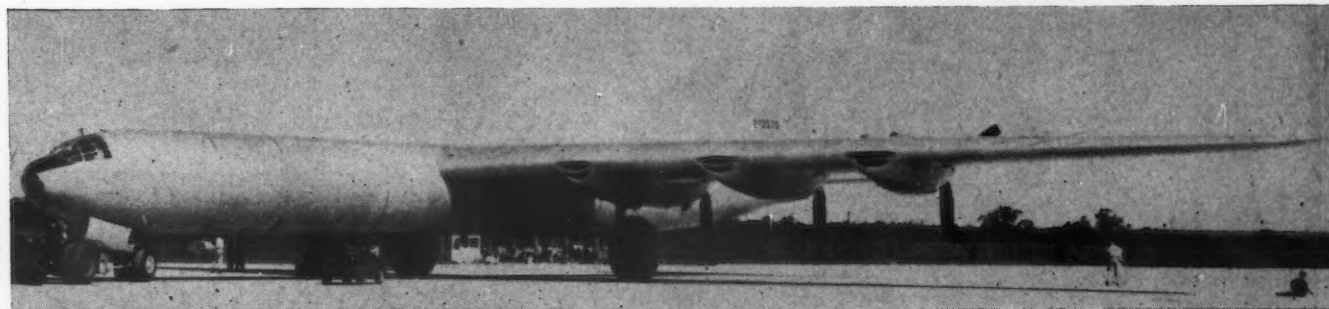
Dimensions of the ship are: Length 58 ft 6 in.; beam, 15 ft, draft, 4 ft. This is one of three such craft being constructed at the yard.

Similar fishing boats are being produced by the score in this area as fishermen come to accept the idea of steel and to believe in the increased safety.

Todd Pacific Shipyards completed its huge warship construction program with the launching of its 46th destroyer, the *Seaman*, and delivery of the completed *Shelton*. The *Seaman* is not scheduled for completion at this time.

R. J. Lamont, president of the shipbuilding company has not announced plans for future activity of his company other than to state that ship repair work is on the schedule. The payroll has been averaging approximately 3000.

WORLD'S LARGEST: Here is Consolidated-Vultee's XB-36, the world's largest land-based bomber. It is a pusher type powered by six 3000 hp Pratt & Whitney engines. It has a wing spread of 230 ft and a fuselage length of 163 ft.



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These are just a few of the war jobs Vickers Hydraulics have done. Others include the precision movement of heavy battleship turrets—the automatic aiming of anti-aircraft guns—the fast precision positioning of ammunition hoists—the control

VICKERS HYDROMOTIVE EQUIPMENT

of bomber gun turrets—and others which, cannot yet be described.

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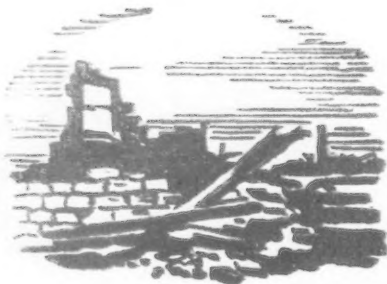


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European Letter

JACK R. HIGHT

• American exporters flood Belgium with shoddy consumer goods . . . Poland offers only substantial coal aid as export prospects from Germany darken.



BRUSSELS—Life here for the average citizen is still difficult, if less parlous than in most of Europe's capitals. While most goods are available, the prices are high, and it seems difficult to the newcomer to be able to define clearly where the legal market ends and the "gray" market begins. I call it "gray" because, as has been said many times, it is so highly organized and so well known to the average citizen that there is little or no moral stigma attached to doing business in it.

There appears to be a more ample supply of consumer goods available in the shops of Brussels than there is in London, and there is certainly much more food to be had. The rationing for the average person is stringent, but it seems likely that most people are able to supplement their rations in some way. Most industrial organizations feed their employees at least one meal in the works, and during the war this food was purchased in nearly every case from the black market. Considering the prevalence of the system today, I think it probable that a large percent of this food for industrial cafeterias is obtained on an extra-legal basis.

In contrast to the supersensitivity which is common in England to the use of American goods, I found a refreshing pride in every store that is selling American goods in

Brussels. Such a subject is, of course, difficult for an American to evaluate, but I usually feel that in England the average man admits with considerable reluctance the need or desirability of obtaining anything from America.

In France many people feel that the American Army has overstayed its leave, resent the way American soldiers act in Paris, and long to see the last of us. In a number of the larger stores in Brussels I was mildly interested to note a crowd around one particular display window, while the other windows were being ignored. I found the crowds around windows decorated with red, white and blue bunting labeled "Imported from America." The crowds stared, and I discovered inside too that they were buying.

The goods that were on display made me feel shamefully apologetic. I saw no single indication in consumer goods lines that anyone is making the effort to export quality products to cultivate consumer respect. The cheap, the tawdry, and the poorly made American goods were much in evidence. The crowds that were buying these articles today are getting a cure that they will long remember. The respect which they have for American things today will not last long under this onslaught of near-worthless rubble.

Life for an American civilian in Brussels at the official exchange rate of 44 Belgian francs to the dollar is expensive. There are legal price ceilings on almost everything, but they are mostly nominal. They furnish only a rough indication of where the prices start. The hotel room charges are reasonable, but eating in a hotel is almost prohibitive.

THERE are legal inclusive meal charges at 25 francs and 54 francs, but I was unable to face the former, and would have felt myself badly maligned if I had been forced to tackle the second more than once while here. Two or three slices from a frankfurter swimming in a limpid pool of thin mashed potatoes and gravy would be the strong backbone for a typical 54 franc meal.

The amusing aspect of this experiment was the treatment I received from the staff as it was served. The waiter made it clear that he did not care whether I lived or not, that I could go ahead and eat it, but that he was anxious to keep body and soul together himself, and 54-franc customers hardly made that possible.

On the other hand, it is possible to be served a quarter of a roast chicken or a small steak in a modest restaurant for about \$3.25. The same meal in a good hotel in Brussels will cost about \$5 or \$6.

The seat of the Inter-Allied Reparations Agency, which was formed following the international conference on the subject in Paris last fall is located in Brussels, but its activities are almost paralyzed at present. The action of the United States has halted the movement of reparations from the American zone to the Russian, and the reparations officials in Brussels are frank to disclaim any knowledge of the future.

The question is now one for discussion in Paris, and later if necessary in Washington, London and Moscow, and the agency here can do little but wait for the decisions. Nominally at least the British policy has not changed. But there is a growing feeling that possibly the Potsdam agreement and the level of industry plan for Germany, as worked out under the Potsdam Declaration, may be scrapped. The British are among the most anxious to see this happen, and so probably they will not allow any substantial amount of German industrial equipment to leave their zones if they think that in the near future the policy may be changed.

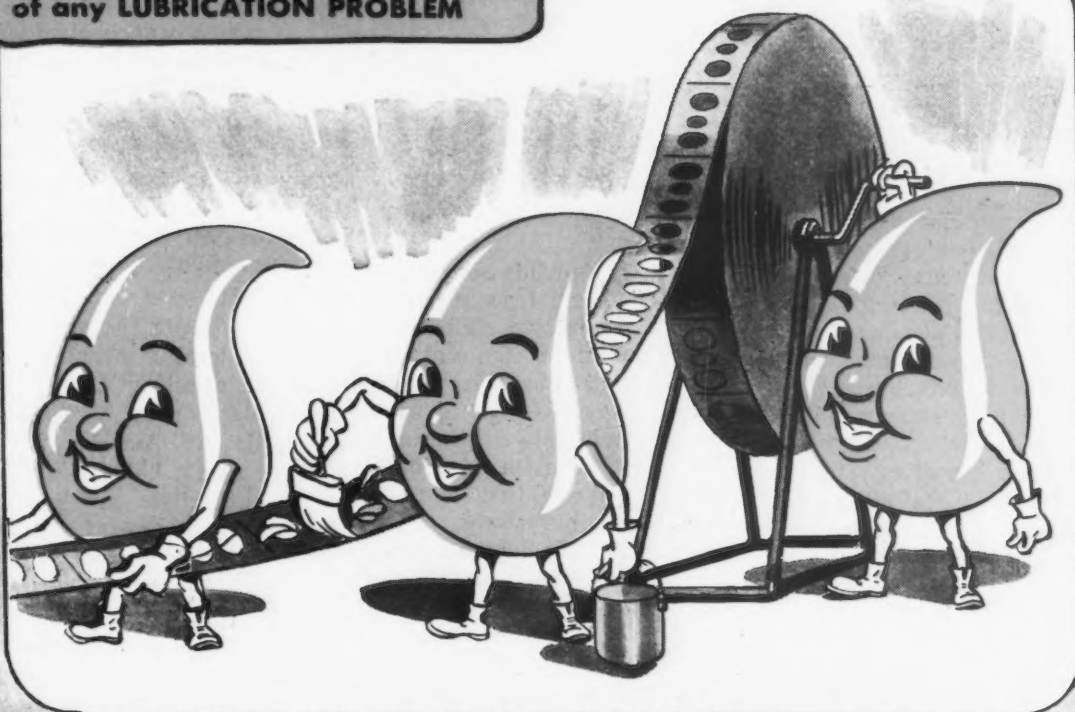
Fortunately the reparations program has been moving so slowly that the British can go along making the advance arrangements for the shipments without nominally announcing a change of policy to the Russians and without any material losses to the British zone.

* * *

PARIS—Following one of the gloomiest international meetings of history, the European Coal Organization has decided that there



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SOLUTION: When the Shell Lubrication Engineer surveyed the problem, he recommended a Shell Ensis product, a rust preventive that can be applied by dipping

at room temperature and which washes off in cold water. The manufacturer was delighted, especially when Ensis-coated coils showed no ill effects after being stored in an area contaminated with acid fumes.

CONCLUSION: It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. Write for a copy of Shell's 40-page booklet on Rust Preventives. Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York; or 100 Bush Street, San Francisco 6, California.

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is no possible way to make up the so-called "minimum" needs of the European countries for the next 12 months. In the opinion of most of the members, the demands pressed by each country were not out of line with their true needs. The coal simply is not being mined and will not be. Most observers feel now that the world coal shortage will be good for at least two or three more years.

With 20 countries represented, 16 of them coal-deficit countries, there was enough scope for a world view of the fuel picture. There were minimum and maximum needs specified for each of the deficit countries, and an effort was made to determine how much would be available from the countries who would be in an exporting position.

America raised its exports to Europe to close to 2 million tons per month before the coal strike, but the most optimistic guessers think that it will be two or three more months before this rate will be achieved again. It is hoped to get exports of about 20 million tons from America in the next 12 months, which will be 5 million above the original estimate.

The biggest producer for the European countries in normal times would be Germany, and original planning called for 20 million tons from Germany in the next 12 months, but it seems unlikely at present that this figure will be reached. There is a growing tendency to make any increased amounts of coal produced in the Ruhr available to the German economy, rather than to the other European countries, and whether this policy is wise or not, it will probably be continued.

The British have been determining the amount of coal available for export from the Ruhr each quarter, although in theory this determination is made by the Allied Control Council in Germany. Since the four powers never have agreed on an allocation, the British have been coming to their own decisions. At present, when the ECO asked the Control Council for an estimate of the amount of coal to be made available for the next 12 months, the occupation authorities simply refused to make an estimate. They stated that in the light of present conditions it would be foolhardy to try.

ONE possible bright spot in the coal situation is the Polish possibility. At present, following some juggling of the Potsdam agreement for Russia and Poland to share the reparations from their zones, Poland has wound up obligated to ship Russia some millions of tons of coal. Most of Poland's coal exports at the present time are being shipped to Russia, but there are some possible physical as well as political limits to such a policy.

There is already some dissension within Poland from men who feel that the country could better afford to ship some of the coal west for goods that the west can offer. There is also some question in other minds as to whether sufficient transport facilities exist to ship the bulk to Russia that is called for under the agreement. Thus the only possibility for very strong improvement seems to be from Poland.

While the despair of all was the most conspicuous feature of the meeting, there were a number of positive steps decided upon which it is hoped will increase the coal output. First, the plan is to raise the food standards for European miners to 3800 calories per day. The primary countries that are thus affected are Germany and Poland.

In the case of the German miners it is also hoped that some additional incentive to work may be furnished. Plans are now approved to make available some consumer goods which will be tied directly to increased output and reduced absenteeism. Thus it is hoped to set up some household utensils, and perhaps children's shoes and other clothing as goals. The miner who then thinks to take the day off may be encouraged by his wife who needs the consumer goods.

Positive steps are also under consideration to improve the deliveries of mining machinery, but this will be a difficult task. There are some plans under way to establish priorities in America for mining machinery, but the involved American authorities are pessimistic about the outcome of the project. Few other countries produce the kind of mechanical equipment needed, and those who do are busy mechanizing their own industries.

The transport problem is also due for further study, although it has not been as serious a problem as some others. For the most part the production of coal has remained so low at all times that the crippled transport system of Europe has been adequate to handle the job.

Steel Controller Studies Canada's Steel Picture

Ottawa

• • • A survey of the entire steel situation in Canada, from primary output to finished products, is being carried out by the Steel Controller with the cooperation of the industries identified with production and processing of steel. Delays, and in many cases, refusals have developed with regard to exports of Canadian steel and a condition of rationing is now in effect. At present there is a serious shortage of steel in Canada, with production and supply far below requirements.

Present conditions in the industry are largely the result of considerable curtailment of shipments of steel from the United States into this country, which has resulted in a heavier burden being placed upon

Canadian steelmakers. In the case, for example, of the railroad car and locomotive plants, acceptance of new contracts for export is restricted, and while orders on hand will be permitted to be completed, supplies of steel to fill these orders will not be allowed to interfere seriously with maintaining as adequate a supply of steel as possible to cover urgent Canadian requirements.

On the other hand, it seems unlikely that much latitude will be given towards accepting new orders for export in these lines until such time as the added burden on the Canadian steel producers begins to ease, largely through a return to a more normal condition of steel imports from the United States.

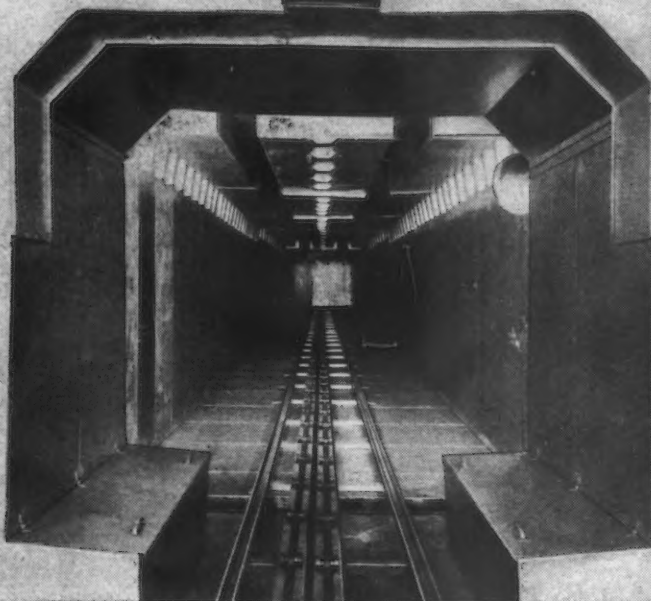
Taking all factors into account, it seems clear that a rigid control of consumption of steel in Canada will be enforced for some time to come.

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Above—Entrance and end of Tunnel Ovens on two of the five production lines in this ultra modern Complete Finishing System. At right—Interior of Mahon Tunnel-Type Enamel Baking Oven for automobile bodies.



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MAHON

PERSONALS

• • •

• **Henry A. Roemer**, founder and chairman of the Niles Rolling Mill Co., Niles, Ohio, has resigned from that company. **C. H. Butts** has been elected chairman; **J. A. Roemer**, president; **A. C. Davidson**, secretary and treasurer; and **J. E. Brady**, auditor. **W. J. Roemer**, formerly traffic manager and sales representative, has been promoted to assistant general manager of sales.

• **K. C. McCutcheon**, formerly general superintendent of the Ashland, Ky. plant of the American Rolling Mill Co., has been appointed as assistant to the vice-president in charge of operations. **J. M. Lobaugh** has been named as general superintendent of the Ashland Div., and **George Yost, Jr.**, assistant to manager of that division. Mr. McCutcheon joined the Ashland organization in 1922. Mr. Lobaugh was originally employed at the Butler, Pa. division of Armco in 1926. In 1943 he was transferred to Ashland to become assistant to manager, which position he has occupied until the recent promotion. Mr. Yost joined Armco in 1925 and was superintendent of processing at the time of his present appointment.

K. C. McCUTCHEON, assistant to vice-president in charge of operations, American Rolling Mill Co.



• **P. H. Desrosiers** has been elected executive vice-president and director of the Joliet Steel Ltd., Canadian subsidiary of the American Brake Shoe Co., New York. Mr. Desrosiers has been directly connected with the steel industry since 1916 when he joined Joliet Steel, Ltd., as secretary-treasurer and later served the company successively as sales manager and managing director until 1932 when he became associated with Sorel Steel Foundries, Ltd.

• **Ralph E. Thompson** has been elected to fill a vacancy on the board of directors of National Research Corp., Boston. Mr. Thompson is chairman of the board and a director of Reed-Prentice Co. and president and director of Scott & Williams, Inc. He is also president of William L. Gilbert Clock Corp.

• **Dr. James T. Eaton**, formerly research assistant to the vice-president, has been made manager of research in charge of E. F. Houghton & Co.'s laboratories and product development, Philadelphia. He has been with Houghton since 1937. **Henry H. High**, formerly superintendent of laboratories, has been named superintendent of the Philadelphia oil dept., in place of **D. M. Harvey**, resigned.

• **A. E. Ashcraft**, vice-president in charge of manufacturing of Fairbanks, Morse & Co., Chicago, has retired, but continues to be a director of the company. **C. H. Morse, III**, vice-president, has been placed in charge of all manufacturing plants and operations. **Henry M. Haase**, formerly assistant work manager, has been appointed manager of the Beloit, Wis. works of the company following the resignation of **A. C. Howard**.

• **John J. Turner** has been appointed sales manager of Botwinik Bros. of Mass., Inc., Worcester. He was formerly with the Savage Arms Corp. and the Remington Arms Co. **Carl G. Larson** has been appointed plant superintendent of Botwinik Bros., coming from Reed-Prentice Co., where he was plant superintendent for 7 yr.



CLIFFORD M. MANZER, chief engineer, Progressive Welder Co.

• **Clifford M. Manzer** has been appointed chief engineer of Progressive Welder Co., Detroit. For the past 22 yr he has been with General Electric Co., the last 11 yr in charge of research, development and manufacturing processes on resistance welding at the Lynn, Mass. plant. **Walter L. Jewett**, who has been chief engineer for Progressive for the past 9 months, has been appointed manager of development engineering. Mr. Jewett has been with the company for the past 10 yr, rising from a resistance welding machine designer to his present position.

• **W. O. Lippman** has been elected vice-president of the Westinghouse Electric Corp., Pittsburgh. He was formerly assistant to the president. **C. D. Kester** has been appointed manager of the York, Pa. office of Westinghouse succeeding **E. M. Powell** who has been appointed machinery electrification manager of the district. Prior to assuming his new duties, Mr. Kester was manager of the machinery electrification section for the Philadelphia district office.

• **William H. North** has joined the sales dept. of the Ferry Cap & Set Screw Co., Cleveland, as assistant to **H. Allen Hall**, secretary and in charge of mill supply and hardware jobber sales. Previous to his service in the Army, Mr. North was a sales representative with the Chas. H. Phillips Chemical Co.

PERSONALS

• **Clifford T. Butler** has been appointed superintendent of the Hercules, Calif. plant of Hercules Powder Co., to succeed **Leroy P. Hall** who has resigned. Mr. Butler was formerly superintendent of the Hercules plant at Bessemer, Ala., and is succeeded there by **Eustace St. P. Bellinger**, who was assistant superintendent at the Hercules, Calif. plant before entering active military service in 1942. Mr. Bellinger has been manager of the Hercules-operated Allegheny Ballistics Laboratory, Cumberland, Md., since returning to inactive duty in 1946.

• **John L. Crum**, formerly assistant purchasing agent of the Colorado Fuel & Iron Corp., has become associated with **Luria Bros. & Co., Inc.**, with his headquarters in St. Louis.

• **Herbert L. Mac Elroy** has been appointed New England representative of the **Geo. P. Reintjes Co.** of Kansas City. His headquarters will be in Boston.

• **Alfons Alven** has been elected president of the **Bearings Co. of America**, Lancaster, Pa., following the resignation of **Henry W. Jackson**. Mr. Alven first joined the Bearings Co. of America organization in 1932 when he was appointed district manager of the Chicago office. In the early spring of 1946, he was elected a director.

ALFONS ALVEN, president, Bearings Co. of America



• **Fred E. Amon** relinquishes his position as general sales manager of the **Parker Appliance Co.**, Cleveland, to devote his full time as manager of aircraft sales. **Dan W. Holmes**, formerly with the **Weatherhead Co.**, joins **Parker Appliance** as general sales manager.

• **Charles F. Navin** has been appointed Detroit district manager of **Oliver Iron & Steel Corp.**, Industrial Fasteners Div.

• **Frank K. McDanel** has been appointed president of **American Bridge Co.** and **Virginia Bridge Co.**, U. S. Steel Corp. subsidiaries. Mr. McDanel started with the organization 42 yr ago as a shopman's helper and for the past 6 yr



FRANK K. McDANEL, president, American Bridge Co. and Virginia Bridge Co.

has served as vice-president in charge of manufacturing operations at the Gary, Ind. plant of the company. He succeeds **Leon A. Paddock** who has retired. Mr. Paddock, since 1931, has directed the structural steel fabricating and erecting work for many large structures such as the San Francisco-Oakland Bay Bridge, Empire State Building, and others. **Austin J. Paddock** has been elected vice-president in charge of manufacturing operations of **American Bridge** to replace Mr. McDanel. **William A. Thiel**, who has been master mechanic during the past 10 yr at the Gary plant, has been promoted to succeed **Austin J. Paddock** as manager of the Gary plant.



W. FRANK KELLY, general superintendent of foundries, American Manganese Steel Div., American Brake Shoe Co.

• **W. Frank Kelly** has been appointed general superintendent of foundries of the **American Manganese Steel Div.** of **American Brake Shoe Co.** with his headquarters in Chicago Heights. Mr. Kelly, who was formerly works manager of the **Amsco** plant in New Castle, Del., has been associated with the division in various capacities since 1925.

• **Henry K. Watson, II** has been placed in charge of foreign and domestic sales of the **Special Coatings Div.** of the **Watson-Standard Co.**, Pittsburgh. He is a director of the company and also of the **First National Bank**, McKeesport, Pa.

• **J. T. Vollbrecht** has been elected a director of **Penn Industrial Instrument Corp.**, Philadelphia. Mr. Vollbrecht is president of the **Energy Control Co., Inc.** of Philadelphia and New York.

• **Ben Coplan**, formerly in charge of the Chicago office of the **Construction Sales Co., Inc.**, is now associated with **Max Schlossberg Co.**, Chicago.

• **E. G. Engman**, founder of the **Eclipse Moulded Products Co.**, Milwaukee, has resigned as president and a director of the firm.



ELMER, A. SCHWARTZ, president, Portsmouth Steel Corp.

• Elmer A. Schwartz has been named president of Portsmouth Steel Corp., Portsmouth, Ohio. He comes to his new post from the Republic Steel Corp., of whose Youngstown district he has been assistant manager since 1943.

• Alfred Cutler has been appointed European sales representative of the International B. F. Goodrich Co., and will have his headquarters in Switzerland. When the factory of the N. V. Rubber Fabriek Vredestien, The Hague, Holland, is completed, Mr. Cutler will become sales manager for that country and supervise exports of the company to the European trade. Sales representative of International B. F. Goodrich in the Far East for 10 yr before the war started, he had been in industrial products sales of the domestic company in the Philadelphia district for the last several years.

• Donald Keating has become affiliated with the technical service staff of Turco Products, Inc., Los Angeles.

• F. S. Middleton, sales manager in the Memphis territory for the Continental Gin Co., Birmingham, died June 19.

• W. Robert Shimer, Sr., 63, retired Bethlehem Steel Co. metallurgist, Bethlehem, Pa., died June 22 after a brief illness.

• Herbert E. Cragin, Jr. has been appointed superintendent of Taylor-Wharton Iron & Steel Co.'s High Bridge, N. J. plant. He was employed by the company in 1934 and resigned as foundry manager when he joined the Navy in 1943. Robert McEldowney, Jr. has been appointed assistant to the High Bridge plant superintendent. He was employed by the company in 1941 and left to join the Marine Corps in 1943.

• Milton J. Steinmetz, railroad sales manager for Snap-On Tools Corp., Kenosha, Wis., has been appointed to the newly created position of industrial sales manager.

• Gail Rutledge has been appointed director of national accounts and coordinator of branch office activities for General Detroit Corp., Detroit. His new position carries the title of assistant to the vice-president. Mr. Rutledge joined the General Detroit Corp. in 1944. Previous to that he was associated with the Addressograph Div. of the Addressograph-Multigraph Agencies for 9 yr in the sales dept.

• Theodore J. Kauffeld and B. Winthrop Pizzini have been elected to the board of directors of Howell Electric Motors Co., Howell, Mich. Mr. Kauffeld is president of Devenco, Inc., and Mr. Pizzini is head of B. W. Pizzini Co.

• B. R. Teree has joined the Weatherhead Co., Cleveland, as project engineer in charge of aircraft development.

• Rolland W. Simpson has joined the staff of Gilbert Associates, Inc., Reading, Pa. Prior to the war, he was an associate sanitary chemist with the Buffalo Sewer Authority.



NEILL S. BROWN, general superintendent, Lincoln Div., Ford Motor Co.

• Neill S. Brown has been named general superintendent of the Lincoln Div., Ford Motor Co., Dearborn, Mich. Previously, Mr. Brown was superintendent of the company's Chester, Pa. assembly plant. He has also been in charge of Edgewater, N. J., and Chicago branch plants. Mr. Brown succeeds J. M. Waggoner who has been transferred to the Ford Rouge plant.

• Boyd R. Hopkins has been appointed eastern district manager of the Thermex Div. of the Girdler Corp., Louisville. He will make his headquarters at New York. He was chief engineer of the Waugh Laboratories, in Pasadena, Calif., before joining the Thermex Div. of Girdler Corp. in 1944. Succeeding Mr. Hopkins as central district representative is Robert S. Logan, Jr., whose offices will be at Cleveland. Mr. Logan was a sales engineer with the Logan Co. when he joined the U. S. Marine Corps in 1942. He became associated with Thermex in 1946.

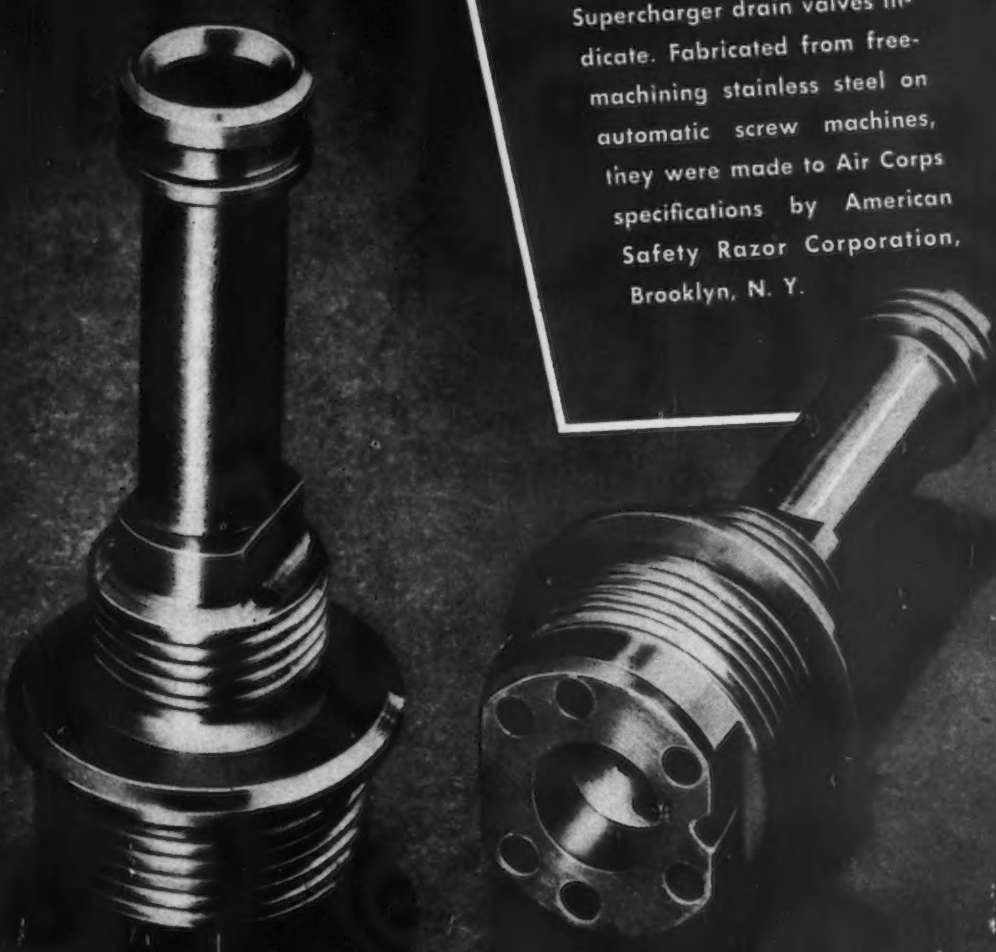
...OBITUARY...

• Burns L. Fish, 54, sales manager of the New England Pressed Steel Co. many years, died June 18 at Natick, Mass.

• Herbert W. Jones, vice-president

of the Bridgeport Brass Co., Bridgeport, Conn., died June 18.

• Gordon B. Cheetham, sales manager of Gemmer Mfg. Co., Detroit, died recently. He was formerly associated with the Burroughs Adding Machine Co. and L. V. Estes Engineering Co.



STAINLESS STEEL may be readily machined . . . as these Supercharger drain valves indicate. Fabricated from free-machining stainless steel on automatic screw machines, they were made to Air Corps specifications by American Safety Razor Corporation, Brooklyn, N. Y.

CHROMIUM—
NICKEL
AUSTENITIC STAINLESS STEELS

Most versatile of modern metals . . . their unique combinations of properties merit your consideration in designing for the future.

International Nickel are miners, smelters, and refiners of Nickel, an important ingredient in the chromium-Nickel austenitic stain-

less steels. Although they do not produce these stainless steels, a list of the sources of supply will be furnished on request.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET, NEW YORK 5, N. Y.

Dear Editor:

THE DUTCH SITUATION

(Editor's Note—The following letter from Holland is published as a matter of interest in that it presents an industrialist's viewpoint of the current world situation, a viewpoint that will find many sympathetic echoes in the United States.)

Sir:

Your editorial, "The Bowlesian Bulge," in the Feb. 28 issue, inspired us to write these comments on the situation here.

Everybody has to pay for the war but not everybody knows that he is compelled to avoid unnecessary expenses for the fancies of some politicians. Seeing the Dutch government tolerating expenses for 18,000 officials for one of the ministries and similar staffs for 13 other ministries and innumerable subordinate magistrates, nobody will be surprised that the statesmen do not deny the necessity of stopping this streaming away of money.

There is no paper here for printing reasonable newspapers, but there is an inundation of papers to be filled in by businessmen when executing an order for which they have to come in touch always with one or more officials. Vigorous arrangements had to be made to clean the Augean stable, born in the war, by creating new authorities and by increasing the staffs of these and of existing offices. Instead of diminishing the expenses, new officials are appointed every week, due to enlarging of the authority of the state to conduct every branch of business.

We see nearly the same situation in every country. Moreover some parts of the world are asking for social experiments beyond measure at a great cost. Although moderation is a virtue in normal times and although countries are in great pain to procure money for postwar reconstruction, some members of governments desire that these great expenses be listed as the first thing to be done. In the long run, no country can pay more than its income for the sustenance of its inhabitants. If this practice is not observed, the foreign debt will be increased until credits are exhausted or the nation's wealth will diminish until stocks and installations vanish. Both these consequences create for everybody the impossibility of yielding rent production and bring the people into danger for their very existence.

Our God is almighty, not the state, especially when the government is formed by professors from economic schools, full of formulas and worshipped by their students, the rising generation of bookkeepers. These theorists desire to reduce their theories to prac-

tice. Every man of industry and every banker knows that going from words to deeds is a long, expensive path, full of caltrops. Every manager knows that income and expenses have to be in due proportion. The state, being in the same straightjacket, cannot continue to work inefficiently at a loss by employing large staffs.

For a long time to come it will have to be the duty of everyone to work harder than ever to gain a production sufficient to fill empty stomachs and to provide mankind with the indispensable necessities of life. If nations persist in expensive social economies, being due to the war, without economic reserves, the present wealth will soon melt away. Everybody will be discouraged, unemployed and poor.

Wasteful governments and expensive social experiments are worth nothing today. Only a sound financial position will enable the world to find the way back to former conditions. Our generation must be bound to create for our children the necessary strong economic situation so that they can again reach the solid shore.

Considering the present world situation today, the question is "to be or not to be." The situation requires work, not despair. The better part of bravery in social matters is caution against promised Utopias.

H. D. KOOPMAN
Manager

H. D. Koopman & Co.
The Hague, Holland

CEMENTED STEELS

Sir:

Would you kindly send us six tear sheets of the article "Cemented Steels" which appeared in the May 2 issue.

ALAN S. MARGOLIES
Research Fellow

Stevens Institute of Technology
Hoboken, N. J.

TRACK BOLT PRICES

Sir:

On p. 119 of the May 16 issue, the price of track bolts is shown as \$4.75 per cwt. Will you kindly advise if this price is correct in view of the 7 pct increase in maximum prices authorized by Amendment 2 MRPR 147, dated Apr. 1, 1946.

T. E. SAVAGE
Purchasing Agent

Erie Railroad Co.,
Cleveland

● The price of \$4.75 is subject to a 7 pct increase and should have been advanced when other bolt and nut items were adjusted. This was an oversight.—Ed.

CONCRETE HOUSES

Sir:

We have read with great interest the article appearing on p. 95 of the Feb. 28 issue in which mention is made of a new process for forming the concrete shell of a four-room house. We should be very glad to receive full information concerning this process and to consider the possibility of utilizing it, by arrangement with the patentees, in the construction of a group of 400 small houses for our workmen and employees. . . .

ADMINISTRADOR

Sociedad Espanola de Construcciones,
Babcock & Wilcox
Galindo, Bilbao

● The concrete house-building machine referred to in the article is being produced at the Tournalayer Div., R. G. LeTourneau, Inc., Longview, Tex. Mr. Richard L. LeTourneau of that plant is forwarding you further details of the process.—Ed.

STEEL PRICING POLICY

Sir:

Kindly send me a copy of the article "Labor Dept. Examines Consumers' Prices of Steel Products." Thirty-five cents is enclosed to cover cost.

A. SIMONS

Manager Eastern Div.
Copco Steel & Engineering Co.
Newark, N. J.

● Reprint has been forwarded.—Ed.

STEEL BOAT MAKERS

Sir:

Referring to your May 9 issue we would be interested in knowing the name and address of the makers of "Steel Craft" as referred to on the "Newsfront" page.

C. H. WILLIAMS
President

Chas. Williams & Associates, Ltd.,
New York

● Steel Craft is a trade name for all-steel pleasure boats made by Churchward & Co., 37 Water St., West Haven, Conn.—Ed.

HEAT TREATING STEEL

Sir:

I would appreciate a copy of Haig Solakian's article on "Heat Treatment of Stainless Steel" from the May 30 issue.

F. R. MORRAL

Metal Trades Laboratory
American Cyanamid Co.
Stamford, Conn.

● Copy has been sent.—Ed.

SUPPOSING

Sir:

I would very much appreciate having two copies of Mr. Van Deventer's editorial "Supposing" in your May 23 issue.

N. M. GRON

Purchasing Dept.
Howe Scale Co.,
Rutland, Vt.

Counting on Quality

A product which, on sight, represents quality, dependability, superior service to the ultimate consumer is a hard-won, priceless asset to its manufacturer. Transue, designers and producers of deep drawn stampings, is proud of its long affiliations with many such manufacturers of well-known products. Their repeated orders to Transue are recognition of a consistent quality in T & W parts, comparable to the quality for which their own finished products are recognized. These manufacturers know they can count on Transue's unvarying attention to uniformity, rigidity, finish and other desired physical properties.

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*Designers and
Makers of Deep
Drawn Stampings*

This Industrial Week . . .

- **Industry Cautious as OPA Goes Out**
- **Sharp Steel Price Advance Unlikely**
- **Steel Output Up 1/2 Point to 89 Pct**

WHILE the steel industry may soon raise the price of some steel products, this action would have taken place whether or not the OPA passed out of existence. It is the general view in the industry that no sharp increases in steel prices will take place in the immediate future now that all government price controls have been removed.

No steel company would be expected to step out front with a healthy price rise for fear of public censure and the possibility that such action might hasten a revival of OPA or similar legislation. Steel firms at this time are primarily interested in raising the price of those products on which the return is low. Until the current situation is clarified no action of any kind on steel prices is expected.

The confusion or the reluctance to make any move pricewise in the steel industry or in the iron and steel scrap industry was reminiscent of the days following the end of the National Recovery Act. Scrap brokers and dealers early this week were sitting tight and shipping on old contracts. Steel companies, on the other hand, were insisting that any scrap they purchased should be at the old ceiling price. If the period during which the government attempts to have passed some type of legislation breathing new life into the OPA corpse is too long, scrap prices may spiral upwards.

CURRENTLY steel companies are attempting to keep their operations at as high a level as possible. Some firms would pay slightly higher prices for scrap in order to get the material and maintain their operating level. Should prices soar substantially in a wide open scrap market, steelmakers would be forced to rapidly adjust their own prices of steel products in order to offset additional increased steelmaking costs.

For the next two weeks at least the price relationship in the steel industry and in the scrap trade will probably remain unchanged. Attempts have already been made by some scrap interests to consign scrap on a retroactive basis. This unusual procedure in a free market left steel firms which had been approached with the idea uninterested.

Over the long pull taking in probably the next 6 to 12 months, steel prices are expected to be advanced on most items. Such an advance will be in addition to any corrected adjustments which might be made much sooner on products giving the makers only a small margin of return. The usual peacetime practice in the steel industry was for a company to name new quarterly prices about a month before the beginning of the quarter for which quotations were announced. Increases or decreases announced by one company were immediately met by other firms.

Huge backlogs and continuing heavy demand caused the steel industry this week in most instances to pay time and a half in primary steelmaking departments for Fourth of July work. Usually steelmaking facilities such as blast furnaces and openhearth shut down over the holiday, but the steel ingot rate this week moved up a half a point to 89 pct of rated capacity, a new high since the end of the recent strike periods.

Steel shipments this month will probably be at the highest level of any time since VJ-Day. Most firms have been able to replenish inventories ahead of steel finishing mills with the result that July operations will present a balanced picture. The only factor which could prevent a continuation of the current high level of operations would be a crisis in the supply of scrap. Scrap this week was still difficult to obtain and the laying of plans for nationwide scrap drives indicated the seriousness with which the civilian production administration views the matter.

OF MORE importance to the steel industry than instituting national scrap drives is the flow of scrap from customers plants. The volume of this manufacturing scrap which finds its way back to steel mills has been increasing recently, but a heavy flow is not expected until manufacturing firms reach a higher rate of activity. In order to offset this unpleasant raw material picture, more blast furnaces have been brought back into operation recently and an uninterrupted output of pig iron in July will go a long ways towards helping the steel production situation.

The self-certification priority system instituted by CPA for the farm, building and warehouse industries has sifted down to mill books and can be evaluated. The volume of such orders is larger than anticipated and in many instances the certifications come from new accounts which had not participated in the voluntary quota system set up by many steel companies. This means that old-line customers who were being taken care of on the basis of their prewar experience have had to move back in the line, while the priority orders were given preference.

MOST steel concerns have still failed as yet to open mill order books for 1947 business. This may be interpreted as having been a wise move especially in view of the price situation. If no further controls are reinstituted on steel prices, producers will be free to name their higher quotations before accepting contracts for next year's shipments.

The Lackawanna Railroad has ordered 500 50-ton hopper cars from Bethlehem Steel Co., 500 from American Car & Foundry Co. and 500 50-ton box cars from Magor Car Corp.

• **BYPRODUCT COKE PRICES UP**—Byproduct retort gas coke producers were given \$1.35 a ton ceiling price increase in an action announced by OPA and made effective on June 28. Consumer prices were adjusted by the same dollar-and-cent amount. Because of higher coal and wage costs, the increase is necessary to return to producers their peacetime profit on net worth, OPA said. The increase may be charged on sales made under the adjustable pricing order.

• **RUSSIAN ENGINE ORDER**—An order for 13 locomotives has been placed with the American Locomotive Co. by the Soviet Union. The USSR order is for steam units of the 2-10-0 type with a 5-ft. gage. The Russian locomotives will be built at the Alco plant in Schenectady, and it is expected that the order will be completed sometime in December.

• **RUSSIAN TINPLATE**—Exclusion of the Soviet Union from third quarter tinplate allocations *THE IRON AGE*, June 20, 1946, p 115) has caused widespread speculation. The general assumption was that Russia failed to disclose its inventory position, either wilfully or because of lack of data. However, Washington sources state that Dept. of Commerce did not ask CPA for an allocation, and it is believed the Soviets did not ask for a quota.

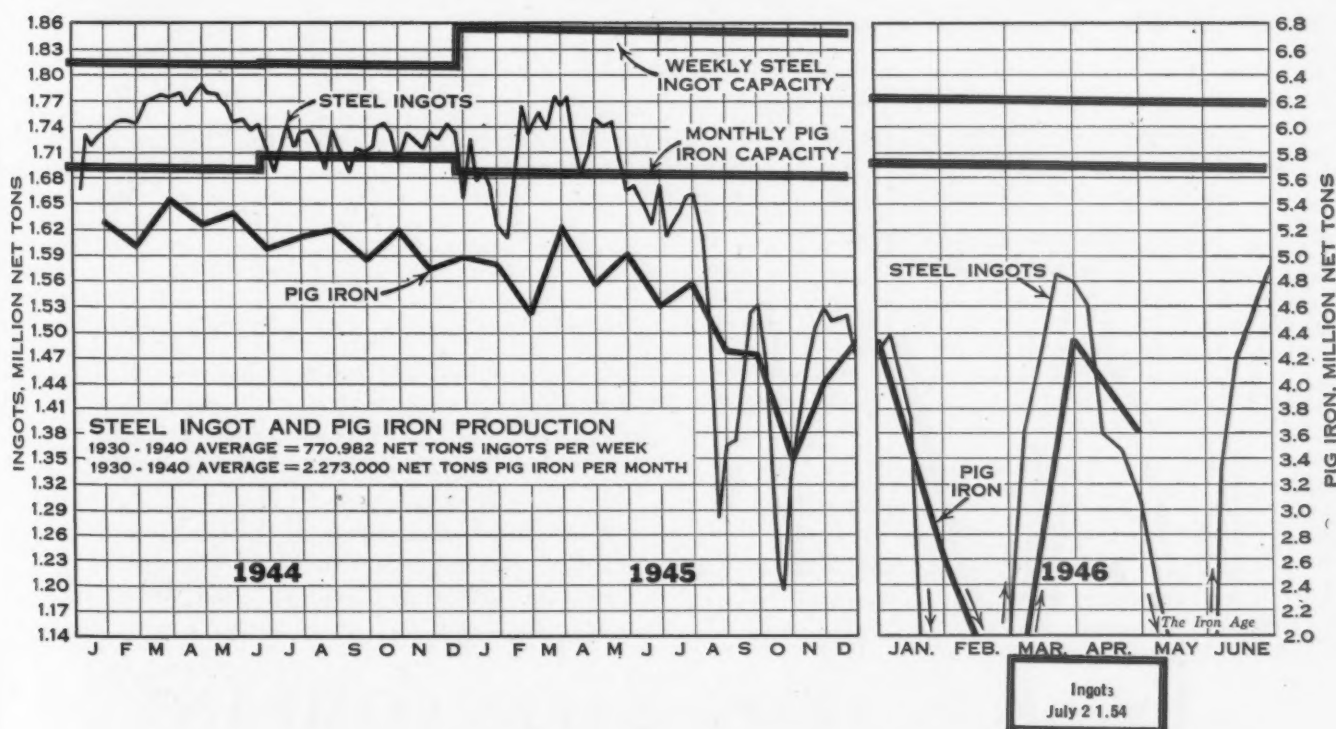
• **CANADIAN WIRE OUTPUT**—Production of steel wire in Canada for the month of April totaled 23,332 tons and consisted of 16,746 tons of plain wire, 5068 tons of galvanized wire, 372 tons of coated wire, and 1146 tons of barbed wire. Production of steel wire fencing in April amounted to 2473 tons, which was 260 tons more than for the average for the first three months of the year. Produc-

tion of iron and steel wire nails in April amounted to 6276 tons, together with 74 tons of iron and steel cut nails, 233 tons of staples and 200 tons of steel, brass and copper tacks. Imports of nails and tacks in April amounted to 35,826 tons.

• **MOTOR OUTLOOK**—Manufacturers of small and large motors are booked ahead through 1948. However, the situation is not as bad for the future as it appears on the surface because manufacturers anticipate cancellations of bookings on a fairly large scale beginning the last of this year. But for the moment anybody who wants to go into the machinery business and requires motors is out of luck. A large tonnage of construction is being sidetracked because of inability to get electrical equipment.

• **CANADIAN SURPLUS SALES**—Sale of surplus Canadian war materials and property by War Assets Corp. during May totaled \$22,600,000 which brings the gross amount received since disposal commenced by War Assets to \$178,900,000. The principal sales for the month under review were in ships which totaled 45.1 pct of the total; automotive vehicles and equipment 22.4 pct; consumer goods, 10.6 pct; lands and buildings, 6.6 pct; mechanical equipment, 4.8 pct; machine tools, 4.4 pct; and miscellaneous 6.1 pct.

• **BELGIAN WORKERS STRIKE**—Thirty thousand workers are on strike in the Liege coal mines and metal industries. The strikers ask that a national labor conference should meet to reconsider wages, and claim participation in the management of industries. The Belgian Government recently declared that it is too early to call a labor conference, as decrees lowering prices one tenth have not yet fully influenced the cost of living.



Steel Ingot Production by Districts and Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
June 25.....	95.0*	88.5	87.0	90.0	87.5	102.0	92.0	99.0	170.5	60.0	99.0	60.0	87.0	88.5
July 2.....	97.0	88.5	88.0	85.0	88.5	102.0	92.0	99.0	130.5	60.0	94.5	63.0	83.0	89.0

* Revised.



Our hands are TIED, too!

There's no secret about the fact that reconversion has hit serious snags. There's no one in industry that has escaped the chain of events which tied our hands.

Back in '41 and '42, and all during the war emergency, Levinson Steel Sales was able to maintain fairly comprehensive inventories. By anticipating requirements we were usually in position to adequately serve our customers in war industries.

But in the present situation we have had no such opportunity. As with others in our industry, our inventory is at its lowest ebb. Hence we cannot offer our customers the usual wide range of items which they have been accustomed to expect from us.

We ask only that you understand our position, and that you believe us when we say *we are striving to do our very best under unusual conditions.*

LEVINSON STEEL SALES COMPANY

33 PRIDE ST., PITTSBURGH, PA.



STRUCTURAL SHAPES · PLATES · CHECKER PLATES · SHEETS · STRIP · HOT ROLLED AND COLD FINISHED BARS
REINFORCING BARS...also APS PLASTEEL ROOFING · BATES OPEN STEEL FLOORING · THORN STEEL WINDOWS

Death Knell of OPA Finds a Cautious Attitude in Industry

New York

• • • Following the automatic expiration of the OPA on June 30, the price situation in the metal-working field reflected a confusion similar to that which occurred when the National Recovery Act was found unconstitutional. Reports from all districts showed that for the most part steel, non-ferrous metals and scrap firms were sitting tight awaiting clarification.

According to some opinion, however, while the steel industry will be expected to advance some of its prices, this would have taken place whether or not the OPA existed or was abolished. It is unlikely that the metals field will see any unusual or widespread price increases in the near future in case price control cannot be re-instituted.

Most companies, including steel firms and others, have had their price structure under close scrutiny in an effort to study the need for higher prices on low-return items. Furthermore, all steel company executives are well aware that if the price of steel should go too high it would not only result in consumer resistance but at the same time would encourage the use of competitive metals or products.

The steel industry is about sold out for the rest of this year with very little chance of being able to promise delivery on major steel products before 1947. The precarious position of OPA during the past few months probably contributed to the fact that no steel firms had officially opened their books for 1947 business. For many years the policy in the industry has been "price at time of shipment."

According to some steel officials, higher quotations on such items as reinforcing bars, track accessories and many wire products are needed in order to balance out the general production pattern. Many companies have eliminated low-return items from their schedules in order to concentrate on more lu-

By TOM CAMPBELL

• • •

crative products which will help bear the cost of recent wage and material increases.

A check of the iron and steel scrap industry on July 1 indicated the same cautious attitude among scrap brokers and dealers as that which existed in steel company offices. While many scrap authorities were of the opinion that scrap prices would advance, firms handling scrap transactions were adopting a wait-and-see attitude.

Shipments on all contracts were going forward but new commitments were at a minimum. The real test in the scrap markets will probably come immediately after it becomes clear whether or not there will be price control legislation. Some steel firms have indicated willingness to pay higher scrap prices on the basis that the supply might expand and the steel companies would be able to replenish their badly depleted inventories.

The present situation in the steel industry is the first open market condition since wartime controls were put into effect several years ago. Prior to that time steel prices were usually announced on a quarterly basis and when a price increase was indicated this was usually about a month before the beginning of the quarter. This policy, however, was not always followed by some steel firms which have often announced higher prices about a week to 10 days before the opening of the quarter.

Conditions in the steel industry are so competitive that when one large producer announces new prices, these are met by other steel-makers and usually within a week all firms have adopted the general price announcements. According to authoritative sources, there is no reason to believe that steel companies will not now adopt the same pricing policies as were invoked before the war.

With competition keener, how-

ever, and with the automobile industry attempting to reach normal peacetime production, interest will be focused on determining whether new customer relationships will appear. The automobile industry in peacetime years was able successfully to drive hard bargains on the price of flat-rolled material which on several occasions caused a wide break in sheet prices.

According to steel analysts wide breaks in the price of steel are hardly likely to come for some time. This opinion, it was said, is predicated on the fact that steel demand far outweighs steel supply and that steel wage costs are far greater in relation to selling prices than was the case before the war.

Runaway prices in the scrap market would force steel companies to post higher prices for their products in order to absorb higher scrap charges. This situation has occurred during peacetime years. Already steelmakers and other consumers of pig iron definitely face an increase in the price of this product. Before OPA was eliminated it is understood the agency was ready to announce a price increase on pig iron amounting to from \$1.50 to \$2 a ton. Many small merchant furnaces have claimed that it was better for them to keep their furnaces shut down than to operate under OPA ceilings.

According to reports from the field the next week or two should see the entire price question in the steel industry somewhat beclouded by events which may transpire at Washington. It is said that probably no steel company would step out right away with higher prices now that controls are off and may remain off.

While the steel industry was able to obtain retroactive price increases under OPA control, the retroactive price boost in a free market would be practically impossible to obtain if the material had been shipped to customers. For that reason and because it is believed steel firms will adopt their prewar price policies, no major company will probably make any announcements for several weeks at least.

Opinion Varies Over Future Status of Machine Tool Activity

Cleveland

• • • Fundamental in times of war and peace, the machine tool industry and its future have been proper subjects of a wealth of comment and copy in the last few years, particularly during the war period. Qualified observers have explored the industry's prospects and found them either wanting or plush, and the wide divergence of opinion still exists.

Months before VJ-Day, it was reasonably apparent that the industry had reached the end of an era. War production tooling, as such, was virtually completed except for the jet propulsion program and a few others, and many of the orders being placed were reconversion business. Subsequent cancellations, which averaged a little less than 15 pct, also indicate that the industry was then working on the first wave of reconversion buying.

By W. A. LLOYD

• • •

With the end of the war, the government-owned machine tool surplus became a full-fledged market factor. Only a certain amount of short-sighted policy, bad handling, and the discouraging enormity of the task have prevented the surplus from taking more of an edge off the market for new machines than has thus far been the case. That the surplus is indeed a potent factor in the present situation despite the \$200,000,000 backlog on which machine tool builders are currently working, is well summed up by one of the industry's most capable critics:

"War changes the nature of demand and presents great hazards to the industry. Machine tools of every kind are required in tre-

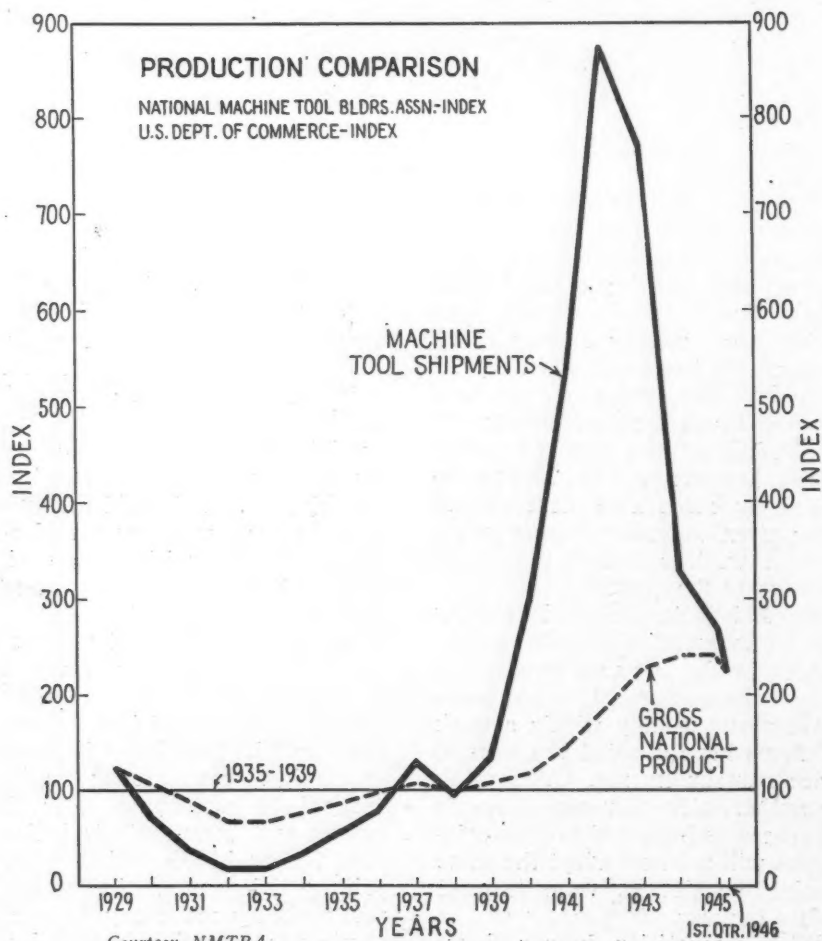
mendous number, not only to produce war materiel in unimaginable variety and quantities, but also to anticipate new requirements. Many of the machine tools built for war purposes are likely to be used for only a very short time so that the aftermath of tremendous war production is certain to be followed by a period in which the great mass of still usable equipment must be absorbed in the manufacture of peacetime goods. This process of absorption continues over many years after the war constantly cutting into the sale of new machines. That is a hazard that the machine tool builders now face."

In 1918, machine tool production was valued at about \$221,000,000. In 1921, production had dropped off to \$36,000,000, and from 1918-25 machine tool production did not total \$100,000,000 in any one year. Thus, it can be seen that while the industry did not produce during World War I anything approaching the dollar volume of machine tool production during World War II, the machine tool market was seriously depressed in the postwar period. This will probably be the case again.

A chart comparing machine tool shipments with the gross national production provides a good basis for forecasting what the future possibilities are for the industry. It is characteristic of the industry that during the dull years demand for machine tools falls below the level of general production so that machine tool builders are beset with longer and deeper depressions than are most of their customers.

A promise of several years of good business ahead starts manufacturers bringing out new types of products and redesigning old lines and in the process, many changes of equipment are required. The demand for machine tools therefore rises to a sharp peak at such times, and falls off rapidly once the manufacturing industries of the country have completed their retooling for volume production.

Faced with the absorption of the government-owned surplus,



and the possibility that the reorganization of the War Assets Administration now under way may greatly expedite the movement of these machines into customers' hands, the haying season for the machine tool builder is at hand; the backlog shows it, and he must make it while the sun shines.

WAA Has Removed All Threat of Nonpayment Of Commission Claims

Washington

• • • Removal of all threat of non-payment of commissions to approved dealers for sales of machine tools now paves the way for WAA to polish off its proposed plan to extend the approved dealer-agent agreements to certain other lines of goods.

A widespread fear that commission claims for sales made prior to June 30 would be disallowed was spiked by Lt. Gen. Edmund B. Gregory, WAA Administrator, who announced on June 28 that the General Accounting Office definitely will not question such claims.

Furthermore, General Gregory confirmed belief that the language now contained in the WAA appropriation bill for the coming year removes any question of the standing of dealer contracts for the coming year. He has issued instructions to the regional offices to continue executing such contracts.

Threat that payments would be disallowed (THE IRON AGE, June 27, P. 118) arose when claims for commissions on sales made after March 25, the date when WAA became an independent agency, were under consideration by the GAO. This agency's function is to determine legality of government expenditures.

Comptroller General Lindsey Warren on May 31 informed General Gregory that his office entertained doubt as to the authority of WAA to enter into such contracts. Two weeks later, General Gregory filed another statement in support of the contracts and pointing out that apparently the GAO's preliminary decision was based on the original Surplus Property Act under which the disposal agency was little more than a policy-making body.

In addition, he reaffirmed his belief that WAA not only inherited from RFC necessary authority to continue execution of such contracts but was also permitted to do so under subsequent changes and amendments to the original act.

These considerations, together with the clear intent of Congress as expressed in the terms of the present WAA appropriation bill for the fiscal year 1946-47, has resulted in withdrawal of GAO objections.

Contract Terminations Hit New All-Time High

Washington

• • • Making an increase of \$400 million over April, terminated war contracts with canceled commitments of \$5.1 billion were settled by government agencies during May, an all-time high for a single month.

By May 31, H. Chapman Rose, director of contract settlement reported the remaining contract terminations awaiting settlement were reduced to 14,283 with \$15.2 billion in canceled commitments. This is less than one-tenth of the number and about one-third of the dollar volume of terminations pending on

VJ-Day or terminated since then.

Included in the May settlements were 4,852 fixed-price terminations with canceled commitments of \$2.9 billion and 62 cost-plus-a-fixed-fee terminations with canceled commitments of \$2.2 billion. During May the War Dept. settled 1,550 cases with \$4 billion in canceled commitments and the Navy 2,113 with canceled commitments of \$1 billion. RFC settlements accounted for most of the remainder.

During May claims totaling \$526 million were settled by all agencies for \$473 million. By May 31 claims for \$1.1 billion had been filed against 7,245 of the pending unsettled fixed-price terminations involving canceled commitments of \$5.1 billion.

Gear Sales Climb

Pittsburgh

• • • The gearing industry, as represented by the members of the American Gear manufacturers assn., shows an increase in volume of sales for May 1946 as compared with April 1946 of 10 pct. This report does not include turbine or propulsion gearing. The index figure for May 1946, was 313.

ON THE WATER WAGON: This commodious 20 man raft inflated with carbon dioxide is designed for maximum protection and comfort. Incidentally it is also to be used for Air-Sea rescue work.



THE IRON AGE, July 4, 1946—109

No Increase in Rated Capacity Seen in Sale of War Plants to U. S. Steel

Pittsburgh

• • • The War Assets Administration's announcement that it had accepted the \$65,013,000 bid of Carnegie-Illinois Steel Corp., subsidiary of U. S. Steel Corp., for the Defense Plant Corp. facilities at C-I's plants in Homestead, Braddock and Duquesne marked the largest cash disposal of government-owned facilities to date. While the disposal is still subject to approval by the Attorney General T. C. Clark, it appears that the Attorney General has already paved the way for such approval by his action on the U. S. Steel purchase of the Geneva, Utah, plant.

At that time he said, "I do not view the sale of the steel plant at Geneva by the WAA to U. S. Steel Corp. as a violation of the anti-trust laws." He continued that with Geneva plant, the corporation's capacity would be "32.7 pct of the industry," and that included the DPC capacity at the three plants now under consideration. Thus, it would appear that acceptance by the Attorney General is pretty much a certainty, especially since the facilities now up for consideration are integral parts of other Carnegie-Illinois owned operations. With the WAA giving the bid price of the corporation a tacit blessing by indicating that it is 100 pct of the fair value of the facilities, strength is added to the supposition that there will be no holdup in the final acquisition of the facilities by the company. The purchase includes:

Edgar Thomson Works — Two blast furnaces, each with rated capacities of 435,000 tons per year of pig iron. Auxiliary power equip-

ment built for the blast furnace installation.

Duquesne Works — One 35-ton and two 70-ton electric furnaces which have a total rated capacity of 165,000 tons of alloy steel per year, and heat treating facilities that are integral to the electric furnace shop.

Homestead Works — Eleven 225-ton openhearth furnaces rated annually at 1,700,000 tons of steel ingots. One 45-in. two-high, single stand slabbing mill of 1,352,000 tons a year capacity. A 160-in. sheared plate mill consisting of a two-high single stand scale breaker and a four-high finishing stand, rated at 600,000 tons a year. An armor plate mill and an armor forge shop. The ground purchased by the government upon which part of the facilities were built.

The acquisition by Carnegie-Illinois of the Homestead openhearth shop, by far the most important unit, will likely have little or no effect upon its present steel ingot capacity or production in the Pittsburgh district. On Jan. 1, 1946, the company took out of operation and out of its capacity estimates 2,370,000 tons of ingot capacity. This involved the No. 1 openhearth shop at Duquesne, the bessemer converters at Edgar Thomson, and shops 1 and 2 at Homestead. Undoubtedly this capacity was retired with the thought in mind of eventually owning the DPC-built openhearth shop at Homestead. The company's operations have been pointed toward this end for some time, since no outside steel producer could operate the facilities.

Since the rental paid by Carnegie-Illinois, totaling \$23,207,854,

was high, it always has been to the advantage of the company to operate the DPC facilities as economically as possible. Consequently, these facilities have been favored with the latest in technological development and are about as modern as any similar units in existence. The steelmaking capacity that was retired early this year was of obsolete vintage and most of it consisted of low capacity individual units. The Homestead openhearth shop replaces just about ton for ton the openhearth capacity that was retired, since its capacity is rated at 1,700,000 tons and that retired was rated 1,698,000 tons.

Asks CPA to Channel Copper Wire Bars To Wire Manufacturers

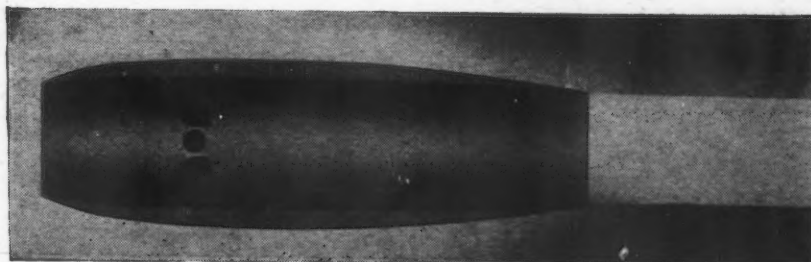
Washington

• • • Channeling of all copper wire bars to wire manufacturers with some exceptions, recommended by the Copper Wire & Cable Mill Advisory Committee is being studied by CPA. Committee members have reported that some users of magnet wire had received finished wire products from manufacturers and also wire bars from the RFC's metals reserve stockpile and that the sale to wire manufacturers only would avoid duplication. The proposed distribution, which would follow the wartime pattern used by WPB, is designed to meet requirements for the Veterans' Housing Program.

Strikes, CPA said, have closed some plants for as long as five months; affecting production to such an extent that at least a 60 to 90 day lag may occur between the reopening of these mills and the arrival of finished products to the market.

The government agency had previously estimated that with all facilities operating, domestic production would be approximately 70,000 tons per month, with the demand greatly in excess of this amount. Consequently, it was stated, the public purchase program instituted in the first half of 1946 must be continued during the last half of the year, contingent upon enactment of the necessary legislation. The metals reserve stocks of copper were said to be deficient in the particular shapes, such as wire bars, which are in greatest demand.

NO MOVING PARTS: Artist's drawing vaguely shows principle of new "Ramjet" engine which has been flight tested at Wright Field experimental laboratory. Engine has no compressor; instead, air is "rammed" in by forward motion of flight.



Says Swollen Demand Rather Than Scarcity Affects Wire Items

Chicago

• • • The present shortages of merchant wire products are not evidence of scarcity but rather of tremendously swollen demand that has automatically reduced the amount of the items available, said E. E. Louis, assistant manager, merchant products division, American Steel & Wire Co., before the annual convention of the National Retail Hardware Assn. here.

Comments of Mr. Louis were directed entirely to the products of the wire industry such as nails, staples, barbed wire, woven wire fence, netting, bale ties, steel posts and annealed and galvanized merchant wire. The reasons why the steel industry, which turned out such vast amounts of products during the war, should not be able to meet the demand today when virtually the entire output is available for peacetime products, were explained to the members of the association.

It was pointed out that the rated capacities of all steel mills whether the product manufactured be wire, sheets, bars or any other items, are based upon 15 turns per week, three turns per day for five days. During the war actual production substantially exceeded the steel industry's figures for capacity operation, which, in many cases, meant continuous operation including Saturdays and Sundays.

With the end of the war, overtime operations were eliminated as the industry felt it could not afford to continue on that basis when ceiling prices had been established on all steel products. Furthermore, the important factor of cost, which rose constantly throughout the war, continued upward making certain economies, such as less overtime labor, necessary. This situation is general throughout the iron and steel industry so that actual capacity to produce products is less today than during the war when the full potential capacity was used.

Mr. Louis recalled that the strikes which have taken place during the first four months of this year affecting steel production, have wasted 70,200,000 man days. The

actual rated capacity, whether it be figured on wartime or postwar periods, was of secondary importance, as the operating rate has been kept at low levels due to labor difficulties.

Maximum production, which until recently was dependent on available labor, now finds itself equally handicapped by lack of materials. The production of merchant wire products although on the increase, will not reach the maximum of the rated capacity of the industry before the fourth quarter of this year, Mr. Louis stated.

With the increase in operating costs, little relief has been given in the selling price of the articles manufactured so that industry has been forced to look to labor for increased efficiency to make up the deficit Mr. Louis said. The speaker emphasized this angle as serious and said that unfortunately the facts are not widely enough recognized.

Statistics taken in a number of large industries have shown that the productivity of the workers in the plants declined more than 34 pct during the war period Mr. Louis asserted. The effort of the workers in our factories today will undoubtedly control the availability of the products needed in the immediate future, the speaker said. Mr. Louis used the example of con-

verting the steel ingots into finished or semi-finished products by showing that the primary thing which gives the ingot added value is the labor which is put into it.

The audience was told that one of the biggest reasons for the shortages today in merchant wire products is that the demand is abnormal. Most of the products are being produced in substantial quantities, and would be more than sufficient to meet our needs, if the demand were on a prewar level. In fact, Mr. Louis pointed out, some of these products are being produced in quantities substantially larger than prewar demand.

This is particularly true of fence, barbed wire and steel posts it was said. One of the major factors limiting the supply of the critical item baling wire was the fact that until recently an OPA regulation required the producer to sell bale tie wire at \$4.00 per ton below the price of the same kind of wire sold for other uses. The speaker said that the price adjustments which have eliminated these inequalities has somewhat relieved the situation but the present supply is in some part due to the conditions which existed during earlier months.

The American Steel & Wire Co. is producing more fence today than

GROUNDING: This ingenious Navy family towed their self-styled trailer 3000 miles. The fuselage was purchased from Surplus Property in Seattle and delivered the enterprising sailor to Philadelphia on time.



at any time in the last 15 yr, but it is still insufficient to meet all requirements it was said. Mr. Louis explained that for every 100 tons of fence manufactured, 70 tons of barbed wire is required with a large increase in the demand for steel posts. In addition, the shortage of wood posts and labor on the farm has also increased the demand for steel posts far beyond the capacity of the entire industry.

The increased demand for paper products of all kinds has contributed to the shortage or scarcity of bale tie wire. New balers are appearing on the market which use coiled wire and are apparently quite satisfactory, and these machines represent new demands for baling wire, the speaker said. Mr. Louis said that it now appears as though a great deal of hay will have to be stacked and either remain in the stack until used or baled from the stack at some later date when ties are available. The physical impossibility of producing more than one wire item without reducing the amount produced of some other item, was cited.

The planning of basic industry is done on a long term basis rather than for the short haul so that the two week vacation period to be taken in July by some producers will not, according to Mr. Louis, affect the overall production. Rather it has been conclusively proved that total production over the entire summer is greater as a result of a simultaneous vacation period, particularly under present conditions, which will allow a build-up of raw material stocks to permit a more steady flow of production for the balance of the year.

Mr. Louis told the convention that his organization is reasonably optimistic about the future in spite of the many difficulties confronting the industry. It is expected that by the end of the third quarter nails should be in more plentiful supply although still not enough to meet the demand. Barbed wire, fence and netting will ease somewhat because of steady production rates. The bale tie situation, although improving, will not be entirely relieved even by the end of the third quarter.

UMW Now in Position To Obtain Contract For Supervisory Men

Washington

• • • Dismissal by the United States District Court here on June 25 of the Jones & Laughlin application for a temporary injunction prohibiting the government's Coal Mines Administration from entering into a union contract with J & L foremen opened the way for John L. Lewis' United Mine Workers to obtain its first union contract on behalf of mine supervisory employees.

Intention of filing an immediate appeal was announced by J & L counsel who argued before the court that negotiation of such contracts between the government agency and the UMW violated not only the Selective Service Law under which the mines were seized but the Constitution as well.

The Dept. of Justice, representing the National Labor Relations Board which had certified the foremen for bargaining, held, however, that "public interest clearly outweighs predictions of irreparable injury by the steel company."

Announcement of the decision came at a time when it was reported that the government was about to enter into a contract with the UMW which would cover J & L supervisory employees. While this report could not be verified, Interior Secretary J. A. Krug said that the Coal Mines Administration is compelled to follow decisions of the NLRB under its contract with UMW.

J & L already had pending in the courts a prior suit seeking to have set aside the NLRB's certification of its foremen for collective bargaining. This certification was made following an election under the Board's auspices in which a majority of the approximately 135 supervisory employees in four of J&L's western Pennsylvania plants chose UMW's Clerical, Technical and Supervisory Union as a bargaining agent.

In seeking the temporary injunction on June 13, J & L contended that the Coal Mines Administration could not legally negotiate such a contract until the upper court rules on the J & L action challenging validity of the election.



FLYING SEAT:

Seated in the pilot ejection seat is Cpl. Fred Hunter from Army Materiel Personal Equipment Laboratory. Hunter's hand is on the trigger which fires the gun that will shoot him 60 fps through the air. Just below Hunter's arm is the container which will automatically explode 3 sec after the seat leaves the plane, releasing the seat from the pilot.

Weekly Gallup Polls . . .

Public Opinion Now Favors G. O. P. Labor Policy

Princeton, N. J.

• • • The Republican party in recent months has gained ground steadily with the public on the issue which voters themselves consider the Number One question of the coming Congressional election campaign — reducing strikes and labor troubles, according to George Gallup, director, American Institute of Public Opinion.

Eight months ago the weight of opinion throughout the country favored the Democrats as over the Republicans in a ratio of 4 to 3 as the party best able to handle the strike situation and reduce the number of work stoppages.

Today opinion has swung around to the point where the Republican party is favored over the Democratic in a ratio of 4 to 3 in handling this same problem.

The change in attitude is found in all major occupation groups, and even among labor union members. Among business and professional people, white collar workers and farmers the change in attitude in the direction of the G.O.P. may have been caused by the strong support which Republicans in Congress gave to the Case anti-strike bill.

The reasons for a change in attitude among union members are matters for speculation. One factor undoubtedly is that although labor leaders give the impression that the rank and file of union members think as a cohesive unit on public issues, actually the movement contains a sizable minority with opinions quite independent of those of the union bosses. This group is critical of strikes which hold up reconversion and put people out of work, and today's survey indicates that many of them place the blame for the situation on the shoulders of the Democratic party.

The nation's views were sought on the following issue in coast-to-coast interviewing by field reporters for the institute:

"As you feel today, which political party—the Democratic or Republican—can better handle the problem of reducing strikes and labor trouble?"

The same question was put to

the public in two previous polls, in February of this year and in October of last year. The trend among those expressing an opinion follows:

	Democratic Party Pct	Republican Party Pct	No Difference Pct
Oct. 1945	41	31	28
Feb. 1946	38	36	26
TODAY	33	41	26

The change of attitude by various occupation groups is shown in the following tables for last October and today.

OCTOBER, 1945

	Dem. Pct	Rep. Pct	No difference Pct
Business, prof., white collar & farmers	36	38	26
Manual workers	48	23	29

Union members polled in the sample in October favored the Democratic party over the Republican by a ratio of nearly 4 to 1.

TODAY

	Dem. Pct	Rep. Pct	No difference Pct
Business, prof., white collar & farmers	28	48	24
Manual workers	39	33	28

The vote among union members today favors the Democrats over the Republicans by a ratio of only 4 to 3 on the issue of handling strikes.

• • • The British and American people have markedly different ideas as to Russia's motives in world affairs.

In Britain the majority with opinions on the subject think Russia is concerned only with securing herself against attack. In the United States, the majority of people think Russia is out to achieve world domination.

The contrasting attitudes are shown in the results of public opinion polls taken in the two countries. In Britain the British Institute of Public Opinion, which has been conducting opinion surveys

Viewpoint Shifts to Point Where a 4 to 3 Majority Feels Republicans Are Better Qualified to Handle Labor Troubles.

• • •

for approximately 10 yr, put the following issue to a vote:

POLL IN BRITAIN

"Some people say that Russia's foreign policy is concerned with making certain of their security, others say that it is imperialist expansion. Which do you think?"

The vote:

	Pct
Security	42
Imperialist expansion	26
No opinion	32

The views of the American people, as sounded in a survey reported last month, contrast with Britain's as follows:

POLL IN U. S. A.

"As you hear and read about Russia these days, do you believe Russia is trying to build herself up to be the ruling power of the world, or is Russia just building up protection against being attacked in another war?"

The vote:

	Pct
Ruling power	58
Protection	29
No opinion	13

In short, the percentage of people who think Russia has imperialistic designs is more than twice as great in the United States as in England, the respective figures being 58 pct in the United States and only 26 pct in England.

Even though the British seem to have less fear than we of Russia's motives, the majority of British voters do not want to see the party in control of their government take too cordial an attitude toward the Communist Party in England.

Recently the British Communist Party applied to England's ruling party, the Labor Party, for affiliation. While the decision was still pending, British voters were polled

(CONTINUED ON PAGE 157)

Automobile Industry Losses \$1.5 Billion

Detroit

• • • Statisticians for the automotive industry estimate that because of strikes and material shortages during the first half of 1946, \$1,500,000,000 in sales have been irretrievably lost. According to calculations made by the Automobile Manufacturers Assn., passenger car production during the first half of 1946 was reduced by 1,680,000 units because of work stoppages and supply shortages.

Production schedules for 1946 submitted to the War Production Board in 1945 called for assembly and delivery to dealers of 2,320,000 cars by the end of June. Actual deliveries totaled only 654,000, more than 1,680,000 cars below schedule.

A rising curve of production starting in the closing months of 1945 had been expected to reach a monthly rate of 500,000 units by June. Actual production fell far below this figure with only 140,000 cars assembled during the month of June.

Strikes in vehicle manufacturing and suppliers' plants, shortages of materials directly or indirectly caused by restrictive governmental policies, a drop in labor productivity and the backwash of the coal and steel strikes were given as the reasons for the failure of the automobile industry to meet its original production schedules.

Receives Clifton Award

Detroit

• • • Alvan Macauley, chairman of the board of Packard Motor Car Co. and for the past 18 yr president of the Automobile Manufacturers Assn. became the sixteenth automotive pioneer to receive the Charles Clifton Automotive Award in recognition of his distinguished service to the automotive industry. Mr. Macauley, who has been an automotive leader for more than a quarter of a century was given the award at the recent annual meeting of AMA in Detroit.

In the citation accompanying the award Mr. Macauley was referred to as a "guiding spirit of the motor industry," who has contributed greatly to public recognition of its place as America's foremost manufacturing industry.

Mr. Macauley served as presi-

dent of the AMA from 1928 to 1946, through some of the industry's most difficult times including the depression of the 30's and the conversion for World War II and reconversion to peacetime in the closing months of 1945. C. E. Wilson, president of General Motors Corp. presented the Clifton Award to Mr. Macauley.

CPA May Relax Some Tinplate Restrictions

Washington

• • • Hope for some relaxation in the present restrictions on tinplate production was expressed here following the June 27 meeting of CPA's Tinplate Industry Advisory Committee.

Third quarter production is expected to exceed 900,000 tons or more than enough to meet present requirements for the period, it was said. Carryover of certified orders into July amounted to around 31,000 tons for domestic consumption and 47,000 for foreign buyers, or 78,000 tons short of meeting requirements for the first six months of 1946.

Another meeting of the committee is scheduled for the middle of August at which time the situation will again be revised and recommendations made as to loosening restrictions. Most important of these is Direction 9 to M-21 providing for the channeling of 85 pct of production to meet food, drug, pharmaceutical and similar needs.

In the meantime, CPA is preparing to issue an amendment to M-21 which affects self-certification of new orders. Specifically, it provides that all manufacturers who have been authorized to certify purchase orders must first come to CPA.

Can Companies Indicted

Washington

• • • Charged with violating the Sherman Antitrust Act by fixing the terms, conditions and prices upon which tin cans are sold, a Federal Grand Jury at San Francisco on July 26 returned a criminal indictment against the American Can Co., and the Continental Can Co., Inc., and seven of their officers. Among the seven charges was one which alleged the use of the basing point system to maintain identical delivered prices.

Coyle Named Director Of Automobile Group

Detroit

• • • Marvin E. Coyle, General Motors Corp. executive vice-president succeeds Albert Bradley of General Motors as a director of the Automobile Manufacturers Assn. Mr. Coyle will serve as the new secretary of the board, a post previously held by Mr. Bradley.

Directors of AMA whose terms of office expired and who were re-elected include: K. T. Keller, Chrysler Corp.; C. W. Nash, Nash-Kelvinator Corp. and A. Edward Barit, Hudson Motor Car Co.

Other directors include: Robert F. Black, White Motor Co.; Paul G. Hoffman, Studebaker Corp.; B. E. Hutchinson, Chrysler Corp.; Alvan Macauley, Packard Motor Car Co.; George W. Mason, Nash-Kelvinator Corp.; P. V. Moulder, International Harvester Co.; C. T. Ruhf, Mack Mfg. Corp., and C. E. Wilson, General Motors Corp.

Officers of AMA in addition to Mr. Coyle, all of whom were re-elected, include: George W. Mason, president; Paul G. Hoffman, vice-president; Robert F. Black, vice-president; Alfred Reeves, advisory vice-president; George Christopher, treasurer, and George Romney, general manager.

Hygiene Foundation Elects New Officers

Pittsburgh

• • • The election of Arthur Batts, president of the Carborundum Co., Niagara Falls, and M. W. Thompson, treasurer and general manager of the Hall China Co., East Liverpool, Ohio, to the board of trustees of Industrial Hygiene Foundation, was announced.

Mr. Batts will represent the grinding wheel industry on the foundation's board and Mr. Thompson the pottery industry. Both industries have been identified with the foundation almost from its organization 11 yr ago.

The annual meeting of foundation's member companies will be held at Mellon Institute, Pittsburgh, the foundation's headquarters, on Nov. 7, 1946, a week earlier than usual. Round table conferences will be held on Nov. 6 and 8, the day before and the day following the general session.

New Group Prepares Drive for Additional Farm and Industrial Scrap

Washington

• • • Centering its efforts on farms, industrial plants and government-owned plants, the newly formed 24-man Iron & Steel Scrap Industry Advisory Committee at a meeting with CPA last week prepared for a nationwide scrap collection drive. Still in a formative stage details of the program will be worked out at another meeting of the committee which will be held soon. Acting in liaison with CPA will be Edwin C. Barringer, president and secretary of the Institute of Scrap Iron & Steel, Inc., and L. D. Green, representing the scrap committee of the American Iron & Steel Institute.

Principal problems include setting up an organization including chambers of commerce and other civic organizations to aid CPA in reaching out to farm areas and industrial plants where it is believed the greatest amount of scrap is located. It was agreed that the farms may offer the quickest source of old material in view of the high farm machinery production since the first of the year.

Members of the Iron & Steel Scrap Advisory Committee are: Frank R. Alter, Alter Co., Davenport, Iowa; William J. Betzler, Republic Steel Corp., Cleveland; Leigh B. Block, Inland Steel Co., Chicago; Frank Buchheit, U. S. Steel Corp. of Del.; Pittsburgh; Abe Byer, American Com-

pressed Steel Corp., Cincinnati; William J. Luria, Luria Bros. & Co., Inc., Philadelphia; Newman Ebersole, American Rolling Mill Co., Middletown, Ohio; P. T. Farrell, Great Lakes Steel Corp., Encorse, Detroit; F. H. Hanfelder, American Steel & Iron Co., Springfield, Mass.; Hugh Kenworthy, Lukens Steel Co., Coatesville, Pa.; Max L. Kimerling, M. Kimerling & Sons, Birmingham, Ala.; Charles W. Knight, Wheeling Steel Corp., Wheeling, W. Va.; Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.; William W. McMillan, National Malleable & Steel Castings, Cleveland; Alex Miller, Columbia Iron & Metal Co., Cleveland; Joseph Paper, Paper, Calmenson & Co., St. Paul; Eli Rosenberg, Joplin Scrap Material Co., Joplin, Mo.; Morris Schapiro, Bost Metals Corp., Baltimore; Morris Schlafer, Schlafer Iron & Metal Co., Detroit; Marshall A. Schapiro, California Scrap Iron Corp., Oakland, Calif.; James D. Sloan, Youngstown Sheet & Tube Co., Youngstown; Arthur Snyder, Bethlehem Steel Co., Bethlehem; J. P. Wade, Jackson, Miss.; William Wolf, Wolf & Co., Hamilton, Ohio.

Limits CC Rating Orders

Washington

• • • CPA has announced that it has reserved the right to limit the amount of a scarce material which a holder of a CC rating may order from one source of supply. Through an amendment to PR 28 it is designed to lessen the impact of a CC rating on a single source of supply where, because of scarcity, over-use of a CC rating might badly cripple a supplier.

Another amendment to the regu-

lation provides for granting CC ratings to industrial food manufacturing, processing, packaging, preservation and storage (except soft drinks, alcoholic beverages and chewing gum) to permit them to complete construction or alteration where the food is vital for famine relief or for the processing and storage of this years crops.

Follansbee Merges With Sheet Metal Specialty

Pittsburgh

• • • Stockholders of Follansbee Steel Corp. at a special meeting authorized the merger with the corporation of its subsidiary, Sheet Metal Specialty Co. Sheet Metal will become the Sheet Metal Specialty Div. of Follansbee.

In connection with the merger the preferred stock of Follansbee Steel will be exchanged for \$80 face value of 4½ pct 20-yr cumulative income convertible debentures (subordinated) and two shares of Follansbee common stock. The new common stock will be \$10 par value and each share of present common will be exchanged for one share of new common. The debentures may be converted into common stock within 3 yr. Conversion price the first year will be \$20 per share, the second year \$22.50 and the third year \$25.

PIG IRON STILL SHORT: May figures for pig iron output show why steel mills have been short of hot metal for steelmaking. Due to the coal strike output in May was only 39.8 pct of capacity. June production was much higher as furnaces got back into blast.

Blast Furnace Capacity and Production—Net Tons—Source: American Iron & Steel Institute

	Number of Companies	Annual Blast Furnace Capacity	PRODUCTION							
			PIG IRON		FERRO-MANGANESE AND SPIEGEL		TOTAL			
			May	Year to Date	May	Year to Date	May	Year to Date	Pct of Capacity	
									May	Year to Date
DISTRIBUTION BY DISTRICTS:										
Eastern.....	12	12,988,970	395,168	2,558,465	14,495	65,442	409,663	2,623,907	37.1	43.8
Pittsburgh-Youngstown.....	15	25,939,940	759,562	5,328,009	6,937	37,477	766,499	5,365,486	34.8	50.0
Cleveland-Detroit.....	7	6,557,500	334,841	1,629,382			334,841	1,629,392	60.1	60.0
Chicago.....	7	14,093,510	523,099	3,014,089			523,099	3,014,089	43.7	51.7
Southern.....	9	4,924,870	146,811	*1,049,230	8,833	*38,083	155,644	*1,087,313	37.2	53.3
Western.....	5	2,836,000	84,799	400,016			84,799	400,016	35.2	34.1
TOTAL.....	36	67,340,590	2,244,280	13,979,191	30,285	141,002	2,274,545	14,120,193	39.8	50.7

* Adjusted.

Steel Exports Hold Own In Ratio to Production; Quality Steels in Fore

New York

• • • Salesmen for export firms of American steel companies are more or less gnashing their teeth in Europe because supplies of steel are so restricted that the volume of exports continues far below requirements of foreign customers. Nevertheless this situation is no worse than that which is present in the United States domestic market where customers are clamoring for deliveries.

Contrary to general belief exports to Europe are on a comparable basis with domestic sales. Records indicate that foreign consumers are obtaining treatment commensurate with exports before the war on a percentage basis. It is true, however, that practically all exports from this country involve products on which the return to the steel mill is the greatest. On the other hand this situation again approximates the domestic picture where producers are concentrating on the production and sale of those products which show the best profit.

Some observers who a few years ago foresaw a large export market for steel from the United States during the first 3 yr after VJ-Day are now beginning to change their sights. It is believed in some circles that by the time domestic de-

mand is taken care of, foreign countries which are busily reconstructing their steel plants will be in a position to furnish steel in quantities which will be beyond current expectations.

Forecasts of a year ago indicated that during the first 3 yr after the war exports from the United States would be exceptionally heavy but would begin to level during the third or fourth year as foreign countries were enabled to meet their own demand. Coal and steel strikes were not envisioned by many sources in 1946. These stoppages have so disrupted export plans that it may be months before any semblance of normal shipments of steel abroad can be attained.

While allocations of steel other than tinplate abroad for reconstruction have been held back because of domestic conditions, it is believed that this will be a live issue within the next month. It is expected that the State Dept. will soon put pressure on the Civilian Production Administration to do something for foreign countries on the question of steel for reconstruction and rehabilitation. Many months ago such fantastic figures as 4,000,000 tons of steel were mentioned as an annual supply for European and Asiatic rehabilitation exclusive of normal exports. This later was reduced to 850,000 tons on a 6-month basis but even this figure was forgotten because of domestic conditions.

Symington Pleads For Unification of Services With Equality for Air

Detroit

• • • If another World War comes, America will be the first nation attacked—not the last nation attacked as she was this time, W. Stuart Symington, Assistant Secretary of War for Air, told the members of The Economic Club of Detroit recently.

Because of recent developments in the air, he said, Detroit is now squarely on the frontier of any possible new assault against this country. From the standpoint of military attack, the polar paths of air routes will be more important than any others, and Detroit is likely to be the focal point of such an attack.

Arguing in favor of industrial research, Mr. Symington pointed out that the Germans in the 1930's were spending seven times the amount being expended by the United States on aeronautical research and development, and the fruits of the German policy were clearly shown by their lead in jet propulsion, supersonic planes and rockets.

Mr. Symington made a strong plea for unification of the armed services into a streamlined single department in which the air forces will have a separate and co-equal position with the Army and Navy. He informed his audience that the air force considers such a co-equal position absolutely vital to the security of the United States.

The Assistant Secretary charged that despite its accomplishments during the war the Air Force is already being relegated to a secondary position. For example, he pointed out that for the fiscal yr 1947 the Bureau of the Budget have approved 1020 planes for the Air Force, and 1359 planes for the Navy. The Navy has been allowed \$385 million to purchase planes, the Air Force only \$369 million.

The speaker pointed out that the Air Force has always had to fight for a responsible place in the Armed Services. Just before retiring, according to Mr. Symington, Gen. Arnold said, "Remember, the Air Force will always have to struggle against criticism of being youngsters. I have flown, in this Army, all my life, am retiring at 62, and yet I am still known around as the kid."

HEAPS OF JEEPS: Here are some of the 2700 Army jeeps, which are to be sold directly to veterans by the War Assets Administration. This method is the result of vitriolic criticism by ex-soldiers because they could buy surplus Army material only through dealers.



The Atomic Plan

THE plan for the international control of atomic energy that Mr. Bernard Baruch presented to the United Nations appears to be, in essence, the scheme developed by Mr. David Lilienthal's Committee some months ago. Mr. Baruch's words, as reported in this country, were distressingly vague on some of the essential points, but the resemblance between the present official proposals, where they are precise, and the earlier report is close, and it is probably safe to take the report as a guide to what is in Washington's mind.

Very briefly, it is proposed to set up an International Atomic Development Authority and to endow it with a worldwide monopoly of the crucial raw materials and of the processes of preparation for atomic fission. National states would bind themselves not to undertake any activities in the field of atomic energy except with the license of the Authority and subject to its inspection.

So much is, by now, commonplace. The distinctive feature of the Lilienthal report was the hope it held out that the fissionable substance could, after preparation by the Authority, be "denatured" in such a way that it would still be of use for all peacetime purposes but could not be used for atomic bombs without the expenditure of much time and effort to remove the "denaturant." Mr. Baruch (again according to such reports as are available) said nothing about this, and it is very much to be hoped that his silence did not indicate any doubt about the technical possibility of "denaturing." For "denaturing" is an absolute essential for any workable system of international control. Without it, the Authority could never afford to make any fissionable material available for any purpose; it could be used to make atomic bombs, and the task of continuously inspecting every power station and workshop in the world to make sure that it was in fact used only for legitimate purposes is obviously impossible on technical

grounds, altogether apart from political difficulties.

But with "denaturing," the task immediately becomes technically possible. The job of the inspectorate is reduced to that of discovering and exposing any "de-denaturing" plants, and these, we are told, would have to be large, they would have to be at work for a considerable time before any bombs could be produced, and their existence could not be disguised under any legitimate excuse. "Denaturing" is not an automatic safeguard; it does not remove the necessity of world-wide inspection. But it does bring the task of inspection within limits that are not impossible for an inspectorate of reasonable size and vigilance. It removes the chief technical obstacle to international control and brings the argument down to its political essentials—how to create a genuinely "nonnational" Atomic Development Authority; how to endow it with an exclusive monopoly of the vital processes; and how to ensure that the inspection is world-wide.

It was on these political issues that Mr. Baruch had his most interesting things to say. He made the offer, on behalf of the United States Government (to which the Senate, however, would have to assent), that when the Authority has established itself "and condign punishment set up for violations of the rules of control, which are to be stigmatized as international crimes," the United States would stop the production of atomic bombs, destroy its stock, and hand over all its secrets and "know how."

In short, the United States is proposing to the other nations a bargain: If the Authority is given such strong and extensive powers that no other nation can have atomic bombs, America will surrender into its hands its present monopoly. But the conditions are that the Authority must be an exclusive agency for the dangerous processes, that it must have full power to inspect, and that sanctions for breach shall be heavy and automatic.

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A wholly impartial observer from some other planet (if even Mars or Saturn could afford to be indifferent to the existence of atomic rockets) might well hold that it is the United States that is making the biggest concessions by agreeing to forego the veto right. Here, after all, is a country which, by any calculation of purely national advantage, has an enormous lead over its potential enemies and is proposing to surrender that advantage and retain no right of veto over what the international Authority does on its own territory. But in the present conjuncture of international affairs a proposal to abolish the Great Power veto is not considered for the effect it may have on America, Britain, France or China. The Russians have made the veto their trade mark, to such an extent that any proposal for simple majority votes, in any international relationship, automatically becomes an anti-Russian proposal.

The Russians have been quite obdurate about the veto. They intended to use it, as Mr. Gromyko has demonstrated, even in comparatively unimportant issues such as Spain. How much more will they cling to it in a really important matter—particularly when what is at stake is the right of international inspectors to penetrate into Soviet territory, to move about freely therein, to have all doors unlocked for them, and to make recommendations for action on the basis of what they discover?

The speech Mr. Gromyko made to the Atomic Energy Commission on Wednesday should not, perhaps, be regarded as a direct answer to Mr. Baruch, since its main substance had obviously been prepared before the American proposal was

(CONTINUED ON PAGE 158)

Canada Seeks Larger Share of U.S. Steel

Ottawa

••• To relieve a part of the acute steel shortage in Canada special efforts are being made through government sources to obtain a larger supply from the United States. So far this year imports of iron and steel from the States have been only about 50 pct of normal due to

strikes and shortages that prevail across the line.

Announcement is made here that shortage of steel in the United States has resulted in a modified "priority" system for Canadian consumers dependent on United States imports. Directive 66 has gone out from the Canadian steel control dept. to aid users in obtaining United States Steel requirements where no tonnage is avail-

able in Canada. This directive covers steel for three groups of critical products; certain agricultural implements; residential building supplies, and railway brake shoes. It puts steel for these purposes on a preferential basis for third quarter needs. Also it is understood pig iron will be placed in a similar category immediately.

The items referred to include types of agricultural machinery required for harvesting the 1946 crop and for famine relief; steel for bath tubs, sinks, lavatories, warm air furnaces, furnace fittings and steel registers. However, nothing definite is known as to how far the United States will cooperate in increasing this preference list.

Canadian Steel Production and Shipments

Toronto

••• For the month of April Canadian steel mills produced 233,176 tons of carbon steel ingots and castings and 14,343 tons of alloy steel ingots and castings and for the same month shipped 242,308 tons of carbon steel products and 6073 tons of alloy steel products. For the month of March mills produced 239,560 tons of carbon ingots and castings and 9557 tons of alloy ingots and castings and shipped 248,225 tons of carbon steel products and 5790 tons of alloy steel products.

During April Canada imported 2,475 tons of pig iron from the United States and for the 4 months imports totalled 5026 tons of iron of which 3364 tons was foundry iron and 1662 tons malleable iron. The following table presents a break-down of production and tonnage shipped in the four months of this year in net tons:

Four Months Ended April 30, 1946	Carbon Steel		Alloy Steel	
	Made	Shipped	Made	Shipped
Forging billets, etc.	19,236	19,470	861	1,270
Other semi-finished shapes not for re-rolling	107,394	109,752	363	358
Structural shapes and piling	47,149	48,545		
Plates	73,786	69,899	6	
Rails	121,717	125,922		
Tie plates and track material	30,598	32,591		
Tool steel	768	701	743	725
Hot rolled bars for forging	22,367	20,883	8,162	8,425
Concrete reinforcing bars	15,819	15,506		
Hot rolled bars for cold finishing	4,160	4,269	6	6
Other hot rolled bars	122,944	120,932	9,072	8,336
Pipes and tubes	49,617	52,539		
Wire rods	93,341	95,059	68	64
Hot rolled black sheets	52,850	48,966		
Cold reduced black sheets	7,480	7,480		
Galvanized sheets	26,966	25,879		
Steel castings—by ingot makers	18,205	18,436	5,479	4,999
—by other foundries	8,393	7,402	154	149
All other shapes, including tin plate, tin mill black plate, cold finished bars and strips, etc.	122,535	121,477	473	456
TOTAL, ALL PRODUCTS	945,325	945,708	25,387	24,788

Producers shipments of primary iron and steel, including steel castings shipped by all foundries for April and for the four months ended April 30, 1946, subdivided according to principal consuming industries are as follows:

	April		Four Months Ended April	
	Carbon Steel	Alloy Steel	Carbon Steel	Alloy Steel
Automotive industries	4,529	3,345	18,642	12,581
Agricultural, including farm machinery	6,728	130	36,261	533
Building construction	14,821	30	55,084	146
Containers industry	15,171	10	57,574	33
Machinery and tools	7,468	492	28,297	2,391
Merchant trade products	22,241	45	92,254	148
Mining, lumbering, etc.	4,844	559	24,398	2,089
National defense	82		491	2
Pressing, forming and stamping	7,597	74	29,290	386
Public works and utilities	3,417	21	10,488	198
Railway operating	43,138	146	151,677	1,041
Railway cars and locomotives	20,251	147	65,219	1,301
Shipbuilding	4,902	23	17,927	95
Miscellaneous and unclassified	2,342	61	10,449	242
Wholesalers and warehouses	23,848	182	97,838	869
Producers interchange	46,992	229	166,859	721
Direct export—to British Empire	9,477	198	53,090	380
—to other countries	4,460	381	29,870	1,632
TOTAL SHIPMENTS	242,308	6,073	945,708	24,788

UK Exports for May Show Increase Over 1938 Monthly Average

London

••• United Kingdom exports for May show an increase on the 1938 average monthly for the first time since the war as well as being more than double in value, according to figures issued by the British Board of Trade. They exceeded April's exports by \$40,800,000 and last December's by more than \$164,000,000. Total exports for the month amounted to \$340,791,320; in addition there were re-exports valued at \$14,440,928.

May imports, at \$463,481,924, were the highest in value since the end of the war, two thirds of the increase of \$72 million on April being due to the larger number of working days in the month.

Heading the list in the export drive are vehicles, machinery and iron and steel. Comparing with March rather than April, as March had only one working day less than May, the value of vehicles exported showed an increase in May of \$16 millions at \$43.6 millions.

The following table gives details of some individual exports:

	May 1946	March 1946	Monthly Average 1938
Main line locomotives (units)	59	26	15
Motor cars (units)	5,622	3,271	3,677
Chassis (units)	2,294	1,113	2,007
Commercial vehicles and chassis (units)	4,886	3,496	1,190
Wireless sets (units)	30,908	14,473	7,053
Rail wagons (tons)	19,878	10,192	3,388
Cranes, hoists (tons)	2,976	1,811	1,794
Electrical generators (tons)	2,414	1,708	960
Electrical motors (tons)	1,217	983	1,038
Machine tools (tons)	4,398	2,627	2,251

Republic's Strip Mill Changes to Increase Youngstown's Output

Youngstown, Ohio

• • • Finished steel production in the Youngstown district plant of Republic Steel Corp. will be materially increased with completion of a new 48-in. strip mill late this year.

The new strip mill, a major project in Republic's postwar expansion and improvement program for the Youngstown district, is being made by adding three four-high finishing stands to the present 84-in. reversing plate mill, together with coiling and coil conveying equipment. It is expected to more than double the production of the present 84-in. mill and to produce a much greater variety of finished products. Sixty percent of the anticipated production will be skelp for making electric weld pipe. The balance will be strip steel for further processing in Republic's Warren district.

The new strip mill will be installed in the existing 84-in. plate mill building, but will necessitate construction of three additional buildings, slab storage area, 200 x 60 ft, coil storage area, 120 x 60 ft, and a brick motor room building 160 x 54 ft. Four heavy duty cranes with capacities between 30 and 50 tons will be installed and one reheating furnace will be built to supplement the three now used at the plate mill.

In the past the capacity for iron and steel making of Republic's five Youngstown blast furnaces, 15 openhearth furnaces and two bessemer converters has considerably exceeded the finishing capacity of the plant. As a result, much of the semi-finished steel has had to be shipped to other steel plants for rolling into sheets, plates, strips, bars, shapes, etc.

Whenever a decline in the demand for steel occurred, Republic in Youngstown felt this decline more seriously than plants where steel production and finishing capacities were better balanced. Orders from the other plants for semi-finished steel from Youngstown were canceled before these mills cut back in their own steel production.

A second project of considerable importance in production at the Republic plant will be the in-

stallation of a new steam turbine high pressure blower on No. 3 blast furnace. This blower will be able to provide a blast of 90,000 cfm at 35 lb pressure and is expected to raise the capacity of the furnace substantially.

The blower is the seventh rotary-type blower to be installed and will complete modernization of the blowing equipment. Six old fashioned vertical steam engines will be scrapped.

At the 10-in. skelp mill at Republic's Bessemer plant a new reheating furnace is being installed which will increase the capacity of that mill from 18,000 tons per month average to about 21,500. A 36-in. edger will be installed on the 14 and 16-in. bar mills to assist in obtaining better quality products.

R. L. Leventry, district manager of the Republic Youngstown district, said that the entire program will be completed this year, providing delivery of equipment now on order is not further delayed by current industrial turmoil. He said all contracts for the work on these projects have been let and orders for all equipment placed.

Follansbee Plans High Silicon Sheet Output

Pittsburgh

• • • Follansbee Steel Corp. announced that it has concluded negotiations to lease the steel production equipment and the mill section of the Parkersburg Steel Co. plant, Parkersburg, W. Va. Follansbee will produce motor and dynamo electrical sheets, largely for the Parkersburg Steel Co., which will operate the fabricating section of the plant. Follansbee will have limited production for the trade.

The Parkersburg Steel Co. formerly was the Parkersburg Iron & Steel Co., which recently was purchased and reorganized by Louis Berkman & Associates of Steubenville, Ohio.

The plant has an annual potential capacity of 36,000 tons of hot-rolled electrical sheets. There will be approximately the same number of employees as before the plant was closed. Union contracts already have been negotiated.

Coming Events

- July 22-23 American Washer & Ironer Manufacturers Assn., French Lick, Ind.
- Sept. 10-14 American Chemical Society, exposition, Chicago.
- Sept. 11-12 Society of Automotive Engineers, national tractor meeting, Milwaukee.
- Sept. 16-20 Instrument Society of America, first conference and exhibit, Pittsburgh.
- Oct. 1-4 Iron & Steel Exposition, Cleveland Public Auditorium, Cleveland.
- Oct. 3-5 National Electronic Conference, Chicago.
- Oct. 3-5 Society of Automotive Engineers, aeronautic meeting and display, Los Angeles.
- Oct. 10-12 American Society Tool Engineers, semi-annual convention, Pittsburgh.
- Oct. 24 American Welding Society, New York.
- Oct. 28-30 American Gear Manufacturers Assn., semi-annual meeting, Chicago.
- Oct. 29-Nov. 1. Refrigerator Equipment Manufacturers Assn., exposition, Cleveland.
- Nov. 7-8 National Founders Assn., New York.
- Nov. 18-22 National Metal Congress and Exposition, Atlantic City, N. J.
- Dec. 2-4 Society of Automotive Engineers, air transport meeting, Chicago.
- Dec. 2-7 National Power Show, New York.

Industrial Briefs . . .

• **KAISER EXPORT OFFICE** — Kaiser Export Sales, representing industrial interests of Henry J. Kaiser, has opened a New York office at 30 Church St., under the direction of William F. Pelletier.

• **TO MANUFACTURE THERMOSTATS** — Conlon Corp., Chicago, has purchased the thermostat div. of the Soreng Mfg. Corp. Conlon will manufacture the thermostats for use in its own ironers and for various electrical fields.

• **NEW BRASS FOUNDRY** — The Midway Brass Foundry has been opened at Beloit, Wis., by Ray Bennett, metallurgist with several foundries, and G. W. Akerlow, formerly with Beloit Foundry Co.

• **NEW FOUNDRY** — Inland Gray Iron Foundry, Inc., is a new plant to be located in Watertown, Wis., with J. H. Budde, formerly with the Grede Foundry interests in Milwaukee, as manager.

• **APPOINTED TO STAFF** — Dr. Roman Smoluchowski, recently a research physicist with the General Electric Co., Schenectady, has been appointed associate professor of metallurgy and a member of the staff of the metals research laboratory at Carnegie Institute of Technology.

• **DOUBLES CAPACITY** — The Metals Refining Co., a division of Glidden Co., plans to spend \$250,000 to enlarge its Hammond, Ind., plant. The new facilities will enable this plant to double the manufacture of iron, copper and lead powder.

• **TO REPRESENT** — The Baldwin Locomotive Works' Export Dept. has been appointed foreign sales representative for the Franklin Railway Supply Co., Inc., it has been announced.

• **ELECTED PRESIDENT** — D. P. O'Keefe, president of O'Keefe and Merritt Co. of Los Angeles, manufacturers of gas ranges and refrigerators, has been elected president of the Gas Appliance Manufacturers Assn. O'Keefe & Merritt recently announced plans for a 50,000 ton capacity sheet mill in Los Angeles.

• **TO HEAD NEW FIRM** — Elmer A. Schwartz has been named president of the newly-formed Portsmouth Steel Corp. and will assume complete charge of operations. Mr. Schwartz, who has been continuously associated with the steel industry for 27 yr, has been assistant manager of the Youngstown district of Republic Steel Corp. since 1943. He is chairman of the Iron & Steel Institute's technical committee on openhearth steelmaking and an executive committee member of the AIME's openhearth committee.

• **WIRE DEPT. MOVES** — The wire drawing dept. of the Morgan Works of Wickwire Spencer Steel Corp. is to be moved to Palmer, Mass. because of expansion of the Morgan Works spring dept.

• **BUYS SUPPLY BRANCH** — Westinghouse Electric Supply Co. has purchased the wholesale electrical supply branch of the Barnes & Brass Electric Co., at Clarksburg, W. Va. Earl L. Charles was named manager.

• **CHANGE OF ADDRESS** — The executive offices of Allegheny Ludlum Steel Corp. have returned to the Henry W. Oliver Bldg., Pittsburgh, and will be located on the twentieth floor.

• **BUYS E. C. STEARNS** — The Cincinnati Tool Co., Cincinnati, announce that they have recently purchased the patterns and good will covering the Clamp line formerly manufactured by E. C. Stearns & Co., Syracuse, N.Y.

WAA Offers \$13 Million At New York Site Sales

New York

• • • Three major sales in this area aggregating over \$13 million worth will open to first-priority buyers on July 8, Col. Frank L. Seymour, New York Regional Director of War Assets Administration, announced.

Of special interest to purchasers in New York City is the sale of more than \$3,000,000 worth of machine tools to be conducted at the WAA New York Disposal Center No. 5, Eastchester Road and Haswell Street, Bronx, N. Y. The sale is the first of a series to be held at the huge WAA "Bronx Warehouse."

The Bronx sale will begin for priority buyers at 9:00 A.M. on July 8. Small businessmen through the RFC will have the next opportunity to buy from July 15 through July 17. Public sale to non-priority buyers will commence July 25.

Largest of these sales, consisting of \$8,000,000 worth of machine tools and industrial equipment, will be held in Harrison, N. J., on the premises of the Otis Elevator Co., 1000 First St., beginning July 8.

Included in the material available are grinders, dust collectors, drilling machines, tapping machines, boring machines, milling machines, lathes, hoists, back spot facers, and industrial furniture. All articles will be sold at fixed prices, with each item clearly tagged for the convenience of customers.

A wide variety of surplus metals having an acquisition value of \$2,000,000 will be placed on sale at U. S. Government Disposal Area No. 9, Linden, N. J., starting on July 8.

A partial listing of available articles follows: Steel floor plates, galvanized steel beams, structural steel beams, structural steel angles, carbon steel bar, high tensile galvanized steel plate, hot rolled hexagon bars, cold drawn alloy steel bars, hot rolled galvanized sheets, hot rolled mild steel strip, hot rolled flat bars—mild steel, black structural tees, alloy steel bars, cold finished steel bars, galvanized angles, galvanized flat mild steel bars, flat steel bars pickled and painted, galvanized plate, cold finish tubing, hot rolled steel bars, hot rolled alloy steel bars.

Also, tool steel, primarily rounds, in the following categories, is included in the sale: carbon tool steel, in rounds, 900,000 lb, 3 to 4 pct tungsten fast; finishing steel, all in rounds, 1,100,000 lb; flat ground stock, Simonds, 6,000 lb; alloy tool steel, in rounds, La Belle Silicon, etc., 190,000 lb.

Construction Steel...

New York

• • • Fabricated steel awards this week included the following:

- 3000 Tons, New York, broadcasting building, to American Bridge Co., Pittsburgh.
- 1900 Tons, Des Moines, Iowa, building addition, for Register & Tribune Newspaper, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 720 Tons, Hammond, Ind., building for Keys Fibre Co., to American Bridge Co., Pittsburgh.
- 345 Tons, Indianapolis, Ind., treating building for Indianapolis Power & Light Co., to American Bridge Co., Pittsburgh.
- 250 Tons, Atlanta, Ga., manufacturing plant for Boyle-Midway Co., to Southern Steel Works Co., Birmingham.

• • • Fabricated steel inquiries this week included the following:

- 16,000 Tons, Rock Hill, S. C., manufacturing plant, for Celanese Corp. of America.
- 5990 Tons, Hull Shore, Ark., trestle, Hull Shore Dam.
- 4000 Tons, State of Mississippi, transformer tower, TVA.
- 2690 Tons, Cotter, Ark., trestle.
- 2005 Tons, Chattanooga, Tenn., manufacturing plant, E. I. du Pont de Nemours & Co.

- 800 Tons, Hookers Point, Fla., power plant for Tampa Electric Co., Stone & Webster Engineering Corp., Boston, engineers.
- 800 Tons, Bakersfield, Calif., power plant for Pacific Gas & Electric Co., Stone & Webster Engineering Corp., Boston, engineers.
- 600 Tons, Garfield, N. J., extension to spinning mill, Stone & Webster Engineering Corp., Boston, engineers.
- 400 Tons, Chelsea, Mass., state soldiers home.
- 400 Tons, Deer Park, Texas, chemical plant for Shell Chemical Corp., Stone & Webster Engineering Corp., Boston, engineers.
- 340 Tons, Charleston, Miss., highway bridge.
- 200 Tons, Great Barrington, Mass., State bridge.
- 180 Tons, Texas, transmission line and substation for Gulf State Utility Co., Stone & Webster Engineering Corp., Boston, engineers.
- 150 Tons, Crussett, Ark., power plant extension for Crussett Lumber Co., Stone & Webster Engineering Corp., Boston, engineers.

• • • Reinforcing bar awards this week included the following:

- 200 Tons, Lewiston, Me., telephone exchange to Northern Steel Co., Boston.

- 200 Tons, Zion, Ill., bakery building, for Zion Industries, through Concrete Steel Co., Chicago.

- 196 Tons, Northfield, Minn., dormitory for St. Olafs College, through Hustad Co.
- 116 Tons, Lorain, Ohio, factory for National Tube Co., to National Tube Co.

• • • Reinforcing bar inquiries this week included the following:

- 1800 Tons, Coram, Calif., miscellaneous bars, Bureau of Reclamation, Denver, Inv. A-20,479-V, bids open July 2.
- 1615 Tons, Gary, Ind., addition to tin mill, Carnegie-Illinois Steel Co.
- 1000 Tons, Granby, Colo., miscellaneous bars, Bureau of Reclamation, Denver, Inv. A-20,479-V, bids open July 2.
- 890 Tons, Chautauqua, N. Y., highway construction.
- 455 Tons, Great Lakes, Ill., U. S. Navy storage building.
- 250 Tons, East Chicago, Ind., building, Public Service Co. of Northern Indiana.
- 220 Tons, Kankakee, Ill., building, General Foods Co.
- 200 Tons, Louise, Ariz., miscellaneous bars, Bureau of Reclamation, Denver, Inv. A-20,479-V, bids open July 2.
- 165 Tons, Forest Grove, Ore., concrete reservoir, City Manager, bids open July 8.
- 160 Tons, State of Ohio, highway construction.
- 140 Tons, Washington County, Pa., road and bridge construction.

Carriers Now Await 2400 Streamline Cars

Denver

• • • The nation's railroads today are awaiting the delivery of more than 2400 streamlined passenger cars, according to Champ Carry, president of the Pullman-Standard Car Mfg. Co., in a recent address before the Denver Chamber of Commerce. He indicated, that this backlog already exceeding the 2300 cars put into service by the railroads and the Pullman Co. prior to 1942, appears to be only a start. Inquiries for new equipment are flowing into the car builders in a steady stream, he said.

The new and radically improved streamliners of the postwar era are expected to revolutionize railroad service as much as did the prewar models, Mr. Carry said. Before the prewar models were introduced, the fastest train service between Chicago and Denver was about 32 hr. The same run today is made in 16 hr.

Such developments just don't happen, said Mr. Carry. The new product represents a considerable planning, research, hard work and financial risk and streamlined trains are no exception. Car

builders have had to develop cars lighter than those already in service and yet capable of operating at greatly increased speed with reasonable size locomotives. At the same time they had to be just as strong and safe as their heavier predecessor, it was said.

A-L Earnings Drop

Pittsburgh

• • • Allegheny Ludlum Steel Corp., reported net earnings of \$252,043 for the first quarter, 1946, as compared with \$936,690 for the same period of 1945. The consolidated net income was after providing for federal income taxes of \$172,800 and was earned on a sales volume of \$16,000,000. The high volume in March offset losses during the strike-affected months of January and February.

Torpedo Plant Change Near

Chicago

• • • The enlargement of the facilities of the naval torpedo plant, at the Naval Ordnance plant, Forest Park, Ill., is nearing completion. The buildings, which were erected primarily for storage and to allow for redistribution of production lines, have been completed.

According to Capt. H. D. Hoffman, commanding officer of the Naval Ordnance installation, the new facilities are not yet in use due to delays in the delivery of certain electrical equipment.

This plant was caught at the end of the war with many torpedoes for which the Navy had no use. The torpedoes on hand and the hundreds of intricate parts are being carefully prepared and stored for possible future use.

The plant was operated by the Amertorp Corp., a subsidiary of American Can Co., during the war. It has since been turned back to the Navy.

To Offer U. S. Aluminum

Washington

• • • CPA Recommended to the office of metals reserve on July 1 the withdrawal of 50 million lb. of aluminum ingots from Government stocks to provide more aluminum for reconversion needs. Most of this metal will be rolled into aluminum sheets. If granted, this would bring total withdrawals this year up to 120 million lb. and will reduce Government holdings to around 250 million lb. of primary aluminum ingots.

MACHINE TOOLS

... News and Market Activities

Builders Gloomy as Orders Fall Off

• • • Echoing a note of pessimism which is being heard more frequently, machine tool orders are falling off and cancellations are being made in sufficient volume to produce comment on the situation by some builders. June was a slow month, according to most reports, and while statistics for the industry are not yet available, it is expected that some plants will show as much as a 15 pct reduction from the average for the year in new orders.

At the same time, the War Assets Administration has instituted a program for the sale of machine tools which are not standard, below Clayton formula prices. Many of these machines are special, many are semi-special, and according to the Cleveland Regional office of the WAA, the program is going along very well, with plenty of customers willing to pay the costs of converting some of this equipment to their present needs.

In the case of the semi-special units, at least one machine tool builder has entered a bid for a number of machines which he will undoubtedly take into his plant and rebuild. They are machines of his own manufacture, built solely for war purposes, and virtually valueless to any peacetime manufacturing enterprise unless rebuilt.

Another case in point is Chevrolet, which recently purchased six presses to convert to current needs. Costs for this job are reportedly high, but the presses were available, and that apparently was the deciding factor. If nothing else, WAA's latest brainchild will probably open up another facet in the surplus machine tool market, if only temporarily.

Dealers, who have been in a state of high dudgeon over payment of WAA commissions, are shortly to be informed that the mess is straightened out, according to sources here. Payments have been made on a three-month basis thus far, and it is likely that the dealers will not be reimbursed for second quarter sales until some time well into the third quarter.

These developments, along with the fact that business is slow at the present time, leads some qualified observers to believe that a trend toward direct selling will show itself in the machine tool market. One major producer of machine tools has recently made this move, and others are expected to follow, particularly where they have a lot of tooling.

In Detroit, good machine tool activity continues although there are indications that some of the edge at least has been taken off the market. While normal cancellations are reported, there is no evidence that either producers or dealers are scrambling for business. Tightness in the supply of castings in addition to difficulties of obtaining electrical supplies are holding up deliveries in many cases. Orders for specialized machine tools are reported to be picking up, spurred on perhaps by activities in the light car field, and Chevrolet is known to be buying for this purpose. While little is known of Ford's plans for a light car, the consensus is that considerable activity is taking place.

If Marine Gen. Graves B. Erskine, recent appointee of John R. Steelman, director of the Office of War Mobilization and Reconversion, is successful in his present campaign to "smash the educational bottlenecks," thousands of returning G-I Joes now enrolling in colleges and vocational schools will have modern machine tools to work on instead of broken down and ancient equipment now being used by most of our educational institutions; taxpayers will be saved the price of furnishing such equipment to schools; and as many as 100,000 standard machine tools now idle and rusting in WAA warehouses and vacant lots will find a useful place in American educational institutions. In addition, it is claimed that WAA will have disposed of a substantial part of its vast store of surplus industrial equipment.

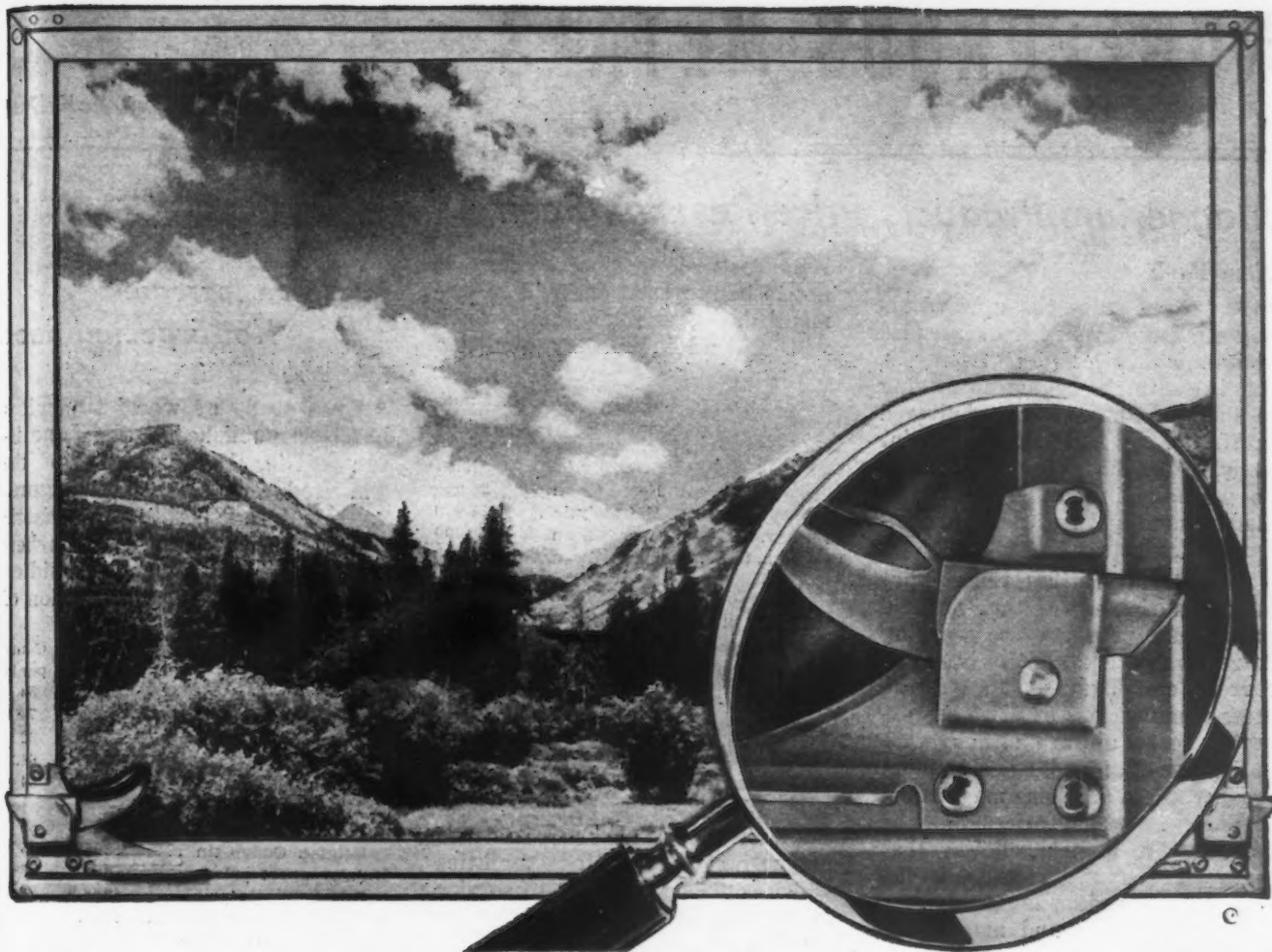
The plan to transfer government property to schools through

donation, climaxes a long campaign to improve the lot of our educational institutions, which, anticipating an enrollment of 2,080,000 students this fall, are faced with the prospect of turning away 500,000 applicants, including 290,000 veterans and providing grossly inadequate machine facilities to those students who are fortunate enough to be accepted.

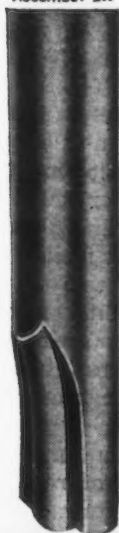
Conscious of the load they would be asked to carry after the war and aware of the inadequacy of their equipment, immediately after VE-Day, it is claimed, colleges and trade schools began to petition WAA individually to make surplus equipment available to them. These efforts were met, it is alleged, with indecision and evasive promises on the part of WAA.

Cincinnati: That domestic business is about equal to foreign ordering is the experience of a number of machine tool manufacturers in this district during the past two months. In fact, in a few instances manufacturers indicate that more than 50 pct of business is from domestic sources. This is the first time for many months that foreign business has not been the heavier portion of demand. Inquiry from all sources continues to be good, and in addition, manufacturers of large machines indicate that in May new business exceeded shipments for the first time this year. The overall picture, therefore, continues to be good.

Boston: Sales of new tools are on the decline. A majority of tool builders and agents now say that sale of government surplus equipment is hurting; that June sales dropped around 50 pct as compared with the previous month. This drop brings some houses down to almost the standstill point. There are those, however, who placed a very fair number of tools in June, but business was confined largely to medium-priced tools. With very few exceptions, however, New England machine tool builders have continued to pay regular and in a few instances increased dividends, all reports of a slump in business to the contrary.



TYPE "A"
ASSEMBLY BIT



Clutch Head Screws

By-pass Skid Damage for Excel Corporation

At this Elkhart, Indiana, plant the manufacture and assembly of steel window sash for Transcontinental, City, School and other types of bus transportation is on a production basis.

Excel Corporation says: "We have found many advantages since standardizing on CLUTCH HEAD Screws:

- We have definitely increased production.
- We have by-passed damage to the painted surface through driver slippage.
- We feel that the surer driving with CLUTCH HEADS is an important safeguard against injury to our operators.
- Simplified operation with an ordinary screwdriver has freed us from complaints regarding field-servicing difficulties.
- The longer life and easy reconditioning of the Type "A" Bit reduces tool cost and saves time."

Send for samples of screws and Type "A" Bit

Non-Tapered Driving

All-square contact of screw and bit eliminates "ride-out" for safer, easier driving. A 60-second application of the end surface to a grinding wheel repeatedly restores this Type "A" Bit to original efficiency.



No Servicing Problems

Because CLUTCH HEAD is basically designed to operate with any common screwdriver which need only be reasonably accurate in width. Thickness of the blade is a secondary consideration.

COMMON
SCREW DRIVER



UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2

CHICAGO 8

NEW YORK 7

NONFERROUS METALS

... News and Market Activities

Magnesium Products Price Revision Seen

New York

... Ever since the upward re-adjustment of rolled and extruded aluminum prices on Apr. 10, coupled with the change in pricing of aluminum ingot from a delivered in U.S. to an f.o.b. shipping point basis, there has been speculation on the possibility of a revision in magnesium ingot and rolled and extruded products.

Now trade sources report that major fabricators of semi-finished magnesium products are working on revised price schedules based on current cost figures. In general, these modifications of price are expected to be upward although, as in the case of at least one aluminum product, there are some magnesium products in which prices may be reduced. It is not believed that there will be any change in the price of magnesium ingot.

Both aluminum and magnesium and their products have been de-controlled by OPA and price modifications are not subject to review by that agency. However the Aluminum Co. of America took the precaution of submitting its proposed new schedule together with supporting cost figures to OPA for approval so that there would be no possibility of resumption of price control over aluminum after the increase which would create confusion in its commercial relationships. Present indications are that the magnesium industry may not follow this precedent if OPA is revived.

Magnesium prices have in the past been based on the price schedule of one of the major fabricators. However at least one other large fabricator is about to break away from this practice and establish a price schedule based on its own costs.

The Dow Chemical Co. is about to reopen its electrolytic magnesium ingot facilities at Freeport, Tex., which has a rated annual capacity of 18,000 tons. This will be the only operating ingot producer, but it is not expected to reach full capacity until the end of July. The Dow plant at Midland, Mich., which, like all other ingot producers has

been closed down since VJ-Day, is not to be reopened and will be dismantled. Other ingot plants which will be held in standby condition are as follows:

Plant	Process	Annual Capacity in Tons
Velasco, Tex.	Electrolytic	36,000
Spokane, Wash.	Ferrosilicon	24,000
Painesville, Ohio	Electrolytic	18,000
Luckey, Ohio	Ferrosilicon	5,000
Canaan, Conn.	Ferrosilicon	5,000

The sheet and extrusion delivery time of all fabricators runs from one to three months with all facilities operating at full capacity. The sole semi-finished products fabricators are Dow Chemical Co., Revere Copper and Brass Co., American Magnesium Corp. (Alcoa), and White Metal Rolling and Stamping Co. There are no other magnesium fabricating facilities which could be returned to service to expedite deliveries.

Magnesium sand casting capacity is available, but die castings are very tight with capacity production of some producers sold out for months. The delay in the production of die castings is largely tied up with the shortage of skilled tool and die makers and this position is not likely to be improved for some time.

To Act Against Lead Battery Violations

Washington

... A proposed change in the base period used for computation of lead allotments to the battery industry was outlined to the Automotive Battery Industry Advisory Committee by CPA on June 25. The second quarter of 1946 would be used rather than 1944. CPA said that basically this plan will not make much difference in quotas but will compensate for numerous "hardship" cases that are repeated each quarter.

The committee was told that 119 battery manufacturers are reported to have violated the lead order, M-38, most of them exceeding their lead quota. CPA Compliance Div. officials said that these

violators are being investigated as speedily as possible.

Tin Price Increase Not Expected Soon

New York

... A study of world tin prices has been published in the June issue of *Tin*, the publication of the Tin Producers' Assn. These figures are significant as to the chaotic state of world commodity markets in the face of government subsidies, inflated currencies and depletion of resources.

	Per ton	Cents per lb
U. K. buying price		
Malayan tin	£300	54
So. African tin	£422	76
Bolivian tin	£345	62
U.K. export price	£357	64.2
U.K. domestic price	£300	54
U.S.A. buying price		
Bolivian tin	£333.5	60
Belgian Congo tin	£305.5	55
U.S.A. export price	£322.2	58*
U.S.A. domestic price ...	£288.9	52
Canada domestic price ..	£320.8	57.75
So. America domestic price (upwards of)...	£389	70
Continent of Europe domestic price (upwards of)	£378	68

* Recently increased to 61¢.

The United States buying price for Bolivian tin is shown at 60¢ per lb. Aside from the fact that this figure is several cents per pound below that being paid for the Bolivian concentrates, it does not include the additional costs incident to the operation of the Texas City smelter. Recently a government spokesman acknowledged that the cost of Longhorn tin from Bolivian concentrates averaged 72¢ per lb.

The sale of Longhorn tin to domestic consumers therefore costs the government in the form of subsidies 20¢ per lb. However, members of the industry do not believe that there is any likelihood of action to increase the domestic tin price soon, assuming Congressional action to continue OPA control, because of the absence of a domestic producing industry to exercise pressure for the price modification. The pressure in this country is more likely to be applied in the other direction by consumers so as to maintain tin prices as low as possible.

NONFERROUS PRICES

Primary Metals

(Cents per lb, unless otherwise noted) *

Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb)	15.00
Aluminum pig, f.o.b. shipping point	14.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be	\$14.75
Beryllium aluminum, 5% Be; dollars per lb contained Be	\$30.00
Cadmium, del'd	90.00
Cobalt, 97-99% (per lb)	\$1.50 to \$1.57
Copper, electro, Conn. Valley	14.375
Copper, electro, New York	14.125
Copper, lake, Conn. Valley	14.375
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$110.00
Lead, St. Louis	8.10
Lead, New York	8.25
Magnesium, 99.9 + %, carlots.	20.50
Magnesium, 12-in. sticks, carlots.	27.50
Mercury, dollars per 76-lb flask, f.o.b. New York	\$100 to \$102
Nickel, electro	35.00
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$56.00
Silver, New York, cents per oz.	70.75
Tin, Straits, New York	52.00
Zinc, East St. Louis	3.25
Zinc, New York	3.65
Zirconium copper, 6 pct Zr, per lb contained Zr	6.00

Remelted Metals

(Cents per lb)

Aluminum, No. 12 Fdy. (No. 2)	11.25 to 11.75
Aluminum, deoxidizing Nos. 2, 3, 4	10.00 to 11.50
Brass Ingot	
85-5-5-5 (No. 115)	15.50
88-10-2 (No. 215)	18.75
80-10-10 (No. 305)	18.25
No. 1 Yellow (No. 405)	12.50

Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded shapes	Rods	Sheets
Copper	25.66	25.81	
Copper, H.R.		22.16	
Copper drawn		23.16	
Low brass, 80%		24.35	24.66
High brass			24.38
Red brass, 85%		24.67	24.98
Naval brass	23.84	22.59	28.53
Brass, free cut		18.53	
Commercial, bronze		25.50	25.81
Manganese bronze	27.45	25.95	32.03
Phosphor bronze, A, B, 5%		43.68	43.43
Muntz metal	23.59	22.34	26.78
Everdur, Herculey, Olympic or equal.		29.82	30.88
Nickel silver, 5%		34.44	32.38
Architectural bronze.	22.50		

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall: 3S, 43.5¢; 52S-O, 67¢ 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 23.3¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb and over.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb and over.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S, 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 27.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢ 1 in., 2 in., 27¢; base, 5000 lb. Rod: 2S, 3S, 1¼ to 2½ in.

(Continued, See Next Column)

diam, rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. Round Wire: drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base; B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢; B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb, f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

Copper, Copper Base Alloys

OPA Group 1†

No. 1 wire, No. 1 heavy copper ..	11.50
No. 1 tinned copper wire, No. 1 tinned heavy copper	11.50
No. 2 wire, mixed heavy copper ..	10.50
Copper tuyeres	10.50
Light copper	9.50
Copper borings, No. 1	11.50
No. 2 copper borings	10.50
Lead covered copper wire, cable.	*
Lead covered telephone, power cable	*
Insulated copper	*

OPA Group 2†

Bell metal	17.25
High grade bronze gears	15.00
High grade bronze solids	*
Low lead bronze borings	*
Babbitt lined brass bushings	14.75
High lead bronze solids	*
High lead bronze borings	*
Red trolley wheels	12.50
Tinny (phosphor bronze) borings.	12.25
Tinny (phosphor bronze) solids.	12.25
Copper-nickel solids and borings.	11.00
Bronze paper mill wire cloth.	11.25
Aluminum bronze solids	10.75
Soft red brass (No. 1 composition) ..	10.75
Soft red brass borings (No. 1)	10.75*
Gilding metal turnings	10.25
Contaminated gilded metal solids.	10.25
Unlined standard red car boxes.	10.00
Lined standard red car boxes	9.50
Cocks and faucets	9.50
Mixed brass screens	9.50
Red brass breakage	9.25
Old nickel silver solids	7.60
Old nickel silver borings	7.50
Copper lead solids, borings	6.75
Yellow brass castings	7.50
Automobile radiators	3.75
Zincy bronze solids, borings	9.75

OPA Group 3†

Fired rifle shells	9.50
Brass pipe	8.75
Old rolled brass	8.25
Admiralty condenser tubes	8.75
Muntz metal condenser tubes	8.25
Plated brass sheet, pipe reflectors ..	7.75
Manganese bronze solids	8.00 ¹
Manganese bronze solids	7.00 ²
Manganese bronze borings	7.25

OPA Group 4†

Refinery brass	6.00*
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*Price varies with analysis. ¹Lead content 0.00 to 0.40 pct. ²Lead content 0.41 to 1.00 pct.

Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb or more, 46¢ a lb; 25 to 90 lb, 56¢; less than 25 lb, 66¢.

Brass Mill Scrap†

Briquetted cartridge brass turnings	10.375
Cartridge brass turnings, loose.	9.625
Loose yellow brass trimmings.	9.625

Aluminum

Plant scrap, segregated

2S solids	8.00 to 8.50
Dural alloys, solids 14, 17, 18, 24S, 25S	4.25 to 4.50
turnings, dry basis	1.50 to 1.75
Low copper, alloys 51, 52, 61, 63S solids	7.00 to 8.00
turnings, dry basis	5.00 to 6.50

Plant scrap, mixed

Solids	4.25 to 4.50
Turnings, dry basis	1.50 to 1.75

Obsolete scrap

Pure cable	6.50 to 7.50
Old sheet and utensils.	5.00 to 3.50
Old castings and forgings.	5.00 to 5.50
Pistons, free of struts	4.00 to 4.50
Pistons, with struts	2.50 to 3.00
Old alloy sheet	2.00 to 2.50

Magnesium*

Segregated plant scrap

Pure solids and all other solids, exempt Borings and turnings	1.50
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Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings.	2.00
Grade 2 solids	2.00
Grade 2 borings and turnings	1.00

*Nominal.

Zinc

New zinc clippings, trimmings ...	6.50
Engravers, lithographers plates ...	6.50
Old zinc scrap	4.75
Unswaged zinc dross	5.00
Die cast slab	4.50
New die cast scrap	4.45
Radiator grilles, old and new	3.50
Old die cast scrap	3.00

Lead

Deduct 1.40¢ a lb from refined metal basing point prices for soft and hard lead including cable, for f.o.b. point of shipment price.

Soft lead scrap	6.50
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Nickel

NI content 98+%, Cu under ¼%, 23¢ per lb; 90 to 98% NI, 23¢ per lb contained NI.

ELECTROPLATING ANODES AND CHEMICALS

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	29.75
Electrodeposited	23.47
Rolled, oval, straight	23.97
Curved, 18 in. or longer	23.97
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer.	27.25
Zinc, cast, 99.99, 15 in. or longer.	16¼
Nickel, 99 pct plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver, 999 fine	
Rolled, 100 oz. lots, per oz.	80¼

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 1-5 bbls	34.00
Copper sulphate, 99.5, crystals, bbls	7.75
Nickel salts, single, 425 lb bbls, frt. allowed	13.50
Silver cyanide, 100 oz lots, per oz.	0.655
Sodium cyanide, 96 pct, domestic, 100 lb drums	15.00
Zinc cyanide, 100 lb drums	33.00
Zinc sulphate, 39 pct, crystals, bbls, frt. allowed	6.35

SCRAP

MONITORING PRICES

... News and Market Activities

Billings Off Sharply With Prices Uncertain

Pittsburgh

... The scrap situation during the past month has been extremely critical. During the war, scrap shortages were evident but at all times there was a substantial quantity of production scrap moving. The present shortage does not have the slack of production scrap to fall back on.

Dealers billings are off substantially from wartime peaks. One of the largest broker-dealer setups in the country reports billings of about 40 pct, which would indicate

For news of the WAA Scrap Iron & Metal Dealers Advisory Committee see p. 163. Details of the CPA's advisory committee will be found on p. 115.

that many smaller firms with restricted facilities for both buying and handling scrap find their billings off as much as 60 to 65 pct.

While there apparently is some holding back of scrap awaiting a higher price, the tonnage involved is not significant. The death of OPA saw no immediate change in the scrap price structure.

PITTSBURGH—Supply is somewhat less critical than a week ago, but the change is so slight that it is hard to gauge. Total movement during the past week was better than a week ago, which was without a doubt the all-time low point. In from 2 to 4 weeks production scrap should begin to move in such quantities that the word "tight" can be substituted for the word "critical" in talking of supplies. No evidence came to hand of either offerings or sales over the OPA listing as a result of the demise of OPA. There may be some later in the week, but as yet consumers are intent on resisting such moves and dealers are aware of this attitude, thus no offering.

CHICAGO—Producers are continuing to dig into what little stocks they have left. One large mill this week made known a substantial requirement for immediate consumption but found few takers. The cycle of mill scrap to furnace within producers plants has eclipsed all previous speed records. The only hope of relief lies in the return of scrap from consumers' plants and as yet this cycle is not in substantial evidence. Producers willingness to absorb high freight charges and preparation costs has been of little avail, although some small quantities are coming in sporadically from the western areas. It is the consensus that the situation is not based

on price. Openhearth operations hang in the balance and will be forced to swing during the next week or two. Scrap is not being brought in from the agricultural districts because the farmer is not discarding old equipment until it is actually replaced with new.

PHILADELPHIA—No scrap is moving in this area since the President's action on OPA. Mills are reported to be willing to accept scrap on established contracts but dealers and brokers are making no move to make shipments at OPA prices. Mills are not ready to negotiate any higher priced contracts for scrap pending a clarification of OPA's position. Meanwhile all factors are awaiting developments.

DETROIT—The confusion in the scrap market existing for several months has been compounded by the present indefinite status of OPA. Present indications are that most dealers are sitting tight, waiting for a clarification of the price situation either by Washing or the scrap association. Where scrap is available and usually where an emergency situation exists, scrap is moving but usually with the provision that price will be adjusted if warranted by future developments. The prevailing policy among dealers and brokers here is to wait for the other fellow to make the first move. If indications up to the present are a criterion the first move will not be made by the steel companies who are reported to have recently rejected several substantial shipments of scrap.

BOSTON—It is still difficult to dislodge scrap, say brokers. Slowing up of yard work by extreme heat and holding of the little free material to await clarification of the price picture are contributing factors, they add. However, they and yardmen report scrap critically short. Plans of CPA for a scrap drive, if concluded, will center on industrial plants if desired results are to be obtained, according to general talk, and will be largely confined to machinery cast, in dire need by foundries.

NEW YORK—General uncertainty clouded the minds of both buyers and sellers here early this week. Dealers are offering nothing until the price picture becomes more definite. Buyers are generally not raising their offers, though one case of an offer of \$2.00 a ton over the former ceiling was refused. Dealers prefer to wait and see rather than sell for too little or have to make refunds if OPA should be revived. The supply picture is still clouded by the shortage of industrial scrap.

BUFFALO—The trade was in a dither this week over prospects of a free market and the increase in freight rates. Dealers generally expected to take to the sidelines until the question of price con-

trols was definitely settled. One leading yard operator estimated upward revision of freight schedules would hike his costs 25 to 30¢ a ton for unprepared scrap. Consumers are expected to absorb the additional local switching charge of about 4¢ a ton for prepared material. Meantime, output of production scrap was retarded by the holiday and vacation shut-downs. One boatload of 5000 tons arrived late last week from Duluth and 5000 tons of heavy melting is due by barge canal this week from New York. Additional canal shipments have been booked for July from the metropolitan area.

ST. LOUIS—The scrap industry plans to stand by until it is definitely settled whether there is to be an OPA with price controls. Because of the uncertainty of the situation the mills will not set prices at which they will buy. Mills generally are comfortably situated and there is no immediate need for supplies which puts them in a position to combat prices higher than the present ceilings. Meanwhile, holders of scrap are withholding shipments as they have been doing for several weeks. Receipts were only fair last week.

CLEVELAND—Aside from a further reduction of consumers' inventories, there has been no change in the market here. Movement of scrap is down to a trickle, with some of the smaller consumers on the verge of closing down. Dealers in rural districts, around some of the smaller cities, and in fact, some scrap sources, are continuing to hold variously estimated tonnages until higher prices have been established.

BIRMINGHAM—The market was marked by uncertainty over prices and shipments following termination of the OPA. Reputable dealers appeared anxious to continue shipments to their regular customers on prices mutually acceptable but what these prices would be and when they would be arrived at was problematical when price control ended. Demand was extremely heavy for all types of material and mill inventories will be declining daily.

TORONTO—Local dealers report scrap iron and steel receipts at only about 50 pct of requirements, with the result that neither dealers nor consumers have had an opportunity to establish stock piles for future needs. The greater part of the scrap appearing on the market is from industrial plants, and light baling materials. Railroads have been making better offerings of late, but most of this is going direct to the steel mills. Little scrap is coming from rural communities and automobile wreckers, although in the past couple of months there has been some minor betterment in automobile scrap as new cars appear on the roads. Cast scrap and stove plate continue the most serious problems, and supply is not sufficient to meet 50 pct of foundry requirements.

Per s
No. 1 hv
RR. hv
No. 2 hv
RR. sc
Ralls 3
No. 1 c
Hand b
Hvy. ax
Hvy. st
Mach. s
Short s
Mixed s
Cast ir
Hvy. br
No. 1 c
RR. kn
RR. co
Rail le
Rolled
Low p
Low pl
RR. m

Per
No. 1
No. 2
No. 1
No. 2
Bundl
Galv.
Mach.
Short
Cast
Mix.
Low
No. 1
Rerol
Misc
Angle
Loco
Cut b
Stand
No.
Coup
Agri
RR.
No.
Rail
No.
Hvy
RR.
Cast
Stov
Cle
Cas

No.
No.
No.
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Ma
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S

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bldd. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
Hvy. break cast.	16.50*
No. 1 cupola	20.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Rolled steel wheels	24.50*
Low phos. bil. crops	25.00*
Low phos.	22.50*
RR. malleable	22.00*

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels, turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy. forge	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Angles & splice bars	22.25*
Locomotive tires, cut	24.25*
Cut bolsters & side frames	22.25*
Standard stl. car axles	25.75*
No. 3 steel wheels	23.25*
Couplers & knuckles	23.25*
Agricul. malleable	22.00*
RR. malleable	22.00*
No. 1 mach. cast.	20.00*
Rails 3 ft. and under	22.25*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Clean auto cast.	20.00*
Cast iron carwheels	20.00*

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	\$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	20.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Scrap rails	21.00*

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

No. 1 hvy. melting	\$15.05*
No. 2 hvy. melting	15.05*
Nos. 1 and 2 bundles	15.05*
Busheling	15.05*
Turnings, shoveling	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast, chem. bor.	\$13.06 to 14.15
Machinery Cast.	20.00*
Breakable cast.	16.50*
Stove plate	19.00*

DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	\$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New busheling	17.32*
Flashings	17.32*
Mach. shop turn.	12.33*
Short shov. turn.	14.32*

Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages. Where asterisks are used they indicate the former ceiling price to which must be added brokerage fee and adjusted freight.

Cast iron borings	13.32*
Mixed bor. & turn.	12.32*
Low phos. plate	19.82*
No. 1 cupola cast.	20.00*
Charging box cast.	19.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Automotive cast.	20.00*

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	14.75*
Mixed bor. & turn.	13.75*
No. 1 cupola cast.	20.00*
Hvy. breakable cast.	16.50*
Cast, charging box	19.00*
Hvy. axle forge turn.	18.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
Billet crops	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

ST. LOUIS

Per gross ton delivered to consumer:

Heavy melting	\$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut.	\$18.50 to 19.00
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	19.00*
Grate bars	15.25*
Brake shoes	15.25*
RR. malleable	22.00*
Cast iron carwheels	20.00*
No. 1 mach'ery cast	20.00*
Breakable cast.	16.50*

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 busheling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	\$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast	20.00*
Stove plate	19.00*
Steel axles	18.50*
Scrap rails	18.50*
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00*
Rails 3 ft. & under	21.00*
Cast iron carwheels	17.50 to 18.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 busheling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Cast iron borings	16.00*

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	13.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn.	12.33*
No. 1 cupola cast	20.00*

Hvy. breakable cast	16.50*
Charging box cast	19.00*
Stove plate	19.00*
Clean auto cast	20.00*
Unstrip. motor blks.	17.50*
Cl'n chem. cast bor.	14.33*

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	14.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
Stove plate	19.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron car wheels	20.00*
RR. coil & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
RR. malleable	22.00*
No. 1 busheling	19.25*

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00*
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel.	16.50*
No. 1 busheling	19.50*
Steel axle turn.	19.00*
Low phos. billet and bloom crops	24.50*
Cast iron borings	15.50*
Mixed bor. & turn.	14.50*
No. 2 busheling	17.00*
No. 1 machine cast	20.00*
Railroad cast	15.25*
Railroad grate bars	19.00*
Stove plate	20.50*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Railroad malleable	22.00*
Elec. furnace punch	22.00*

SAN FRANCISCO

Per gross ton delivered to consumer: *

RR. hvy. melting	\$18.00*
No. 1 hvy. melting	17.00*
No. 2 hvy. melting	17.00*
No. 2 bales	\$15.00 to 15.75
No. 3 bales	8.50 to 9.25
Mach. shop turn.	6.50 to 7.25
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast.	19.00 to 21.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$17.00*
No. 2 hvy. melting	17.00*
No. 1 bales	\$16.00 to 16.75
No. 2 bales	15.00 to 15.75
No. 3 bales	8.00 to 9.00
Mach. shop turn.	7.00
No. 1 cupola cast.	19.00 to 21.00

SEATTLE

Per gross ton delivered to consumer:

RR. hvy. melting	\$14.50*
No. 1 & No. 2 hvy. melting	14.50*
Elec. furn. 1 ft. und.	\$14.00 to 15.00
No. 1 cupola cast.	20.00*

HAMILTON, ONT.

Per gross ton delivered to consumer:

Heavy melting	\$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

Comparison of Prices . .

Advances over past week in Heavy Type; declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(cents per pound)	1946	1946	1946	1945
Hot-rolled sheets	2.425	2.425	2.425	2.20
Cold-rolled sheets	3.275	3.275	3.275	3.05
Galvanized sheets (24 ga.)	4.05	4.05	4.05	3.70
Hot-rolled strip				
6-in. and under	2.45	2.45	2.45	2.10
Over 6 in.	2.35	2.35	2.35	2.10
Cold-rolled strip	3.05	3.05	3.05	2.80
Plates	2.50	2.50	2.50	2.25
Plates, wrought iron	4.112	4.112	4.112	3.80
Stain's c-r strip (No. 302)	30.30	30.30	30.30	28.00

Tin and Terneplate:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(dollars per base box)				
Tinplate, standard cokes	\$5.00	\$5.00	\$5.00	\$5.00
Tinplate, electro (0.50 lb)	4.50	4.50	4.50	4.50
Special coated mfg. ternes	4.55	4.55	4.55	4.30

Bars and Shapes:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(cents per pound)				
Merchant bars	2.50	2.50	2.50	2.25
Cold-finished bars	3.10	3.10	3.10	2.65
Alloy bars	2.92	2.92	2.92	2.70
Structural shapes	2.35	2.35	2.35	2.10
Stainless bars (No. 302)	25.97	25.97	25.97	24.00
Wrought iron bars	4.76	4.76	4.76	4.40

Wire and Wire Products:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(cents per pound)				
Bright wire	3.05	3.05	3.05	2.75
Wire nails	3.75	3.75	3.25	2.90

Rails:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(dollars per net ton)				
Heavy rails	\$43.39	\$43.39	\$43.39	\$43.00
Light rails	49.18	49.18	49.18	45.00

Semifinished Steel:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(dollars per gross ton)				
Rerolling billets	\$39.00	\$39.00	\$39.00	\$36.00
Sheet bars	38.00	38.00	38.00	36.00
Slabs, rerolling	39.00	39.00	39.00	36.00
Forging billets	47.00	47.00	47.00	42.00
Alloy blooms, billets, slabs	58.43	58.43	58.43	54.00

Wire Rods and Skelp:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(cents per pound)				
Wire rods	2.30	2.30	2.30	2.15
Skelp	2.05	2.05	2.05	1.90

Pig Iron*:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(per gross ton)	1946	1946	1946	1945
No. 2 foundry, Phila.	\$28.34	\$28.34	\$28.34	\$26.84
No. 2, Valley furnace	26.50	26.50	26.50	25.00
No. 2, Southern, Cin'ti.	26.94	26.94	26.94	25.44
No. 2, Birmingham	22.88	22.88	22.88	21.38
No. 2 foundry, Chicago†	26.50	26.50	26.50	25.00
Basic, del'd eastern Pa.	27.84	27.84	27.84	26.34
Basic, Valley furnace	26.00	26.00	26.00	24.50
Malleable, Chicago†	26.50	26.50	26.50	25.00
Malleable, Valley	26.50	26.50	26.50	25.00
L. S. charcoal, Chicago	42.34	42.34	42.34	42.34
Ferromanganese†	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.
‡ For carlots at seaboard.
*Subject to retroactive adjustment.

Scrap:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(per gross ton)				
Heavy melt'g steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh	20.00	20.00	20.00	20.00
No. 1 cast, Philadelphia	20.00	20.00	20.00	20.00
No. 1 cast, Chicago	20.00	20.00	20.00	20.00

Coke, Connellsville:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(per net ton at oven)				
Furnace coke, prompt	\$7.50	\$7.50	\$7.50	\$7.50
Foundry coke, prompt	9.00	9.00	9.00	9.00

Nonferrous Metals:	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
(cents per pound to large buyers)				
Copper, electro., Conn.	14.375	14.375	12.00	12.00
Copper, Lake, Conn.	14.375	14.375	12.00	12.00
Tin, Straits, New York	52.00	52.00	52.00	52.00
Zinc, East St. Louis	8.25	8.25	8.25	8.25
Lead, St. Louis	8.10	8.10	6.35	6.35
Aluminum, virgin	15.00	15.00	15.00	15.00
Nickel, electrolytic	35.00	35.00	35.00	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	14.50	14.50	14.50	14.50

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.

Composite Prices . .

FINISHED STEEL	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
July 2, 1946	2.72115¢	2.72115¢	2.72115¢	2.72115¢
One week ago	2.72115¢	2.72115¢	2.72115¢	2.72115¢
One month ago	2.72115¢	2.72115¢	2.72115¢	2.72115¢
One year ago	2.44076¢	2.44076¢	2.44076¢	2.44076¢

HIGH	LOW
1946..... 2.72115¢ Apr. 2	2.54490¢ Jan. 1
1945..... 2.44104¢ Oct. 2	2.38444¢ Jan. 2
1944..... 2.30837¢ Sept. 5	2.21189¢ Oct. 5
1943..... 2.29176¢	2.29176¢
1942..... 2.28249¢	2.28249¢
1941..... 2.43078¢	2.43078¢
1940..... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939..... 2.35367¢ Jan. 3	2.26689¢ May 16
1938..... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937..... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936..... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935..... 2.07642¢ Oct. 1	2.06492¢ Jan. 8
1934..... 2.15367¢ Apr. 24	1.95757¢ Jan. 2
1933..... 1.95578¢ Oct. 3	1.75836¢ May 2
1932..... 1.89196¢ July 5	1.83901¢ Mar. 1
1931..... 1.99626¢ Jan. 13	1.86586¢ Dec. 29
1930..... 2.25488¢ Jan. 7	1.97319¢ Dec. 9
1929..... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 28, 1941, issue.

PIG IRON	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
July 2, 1946	\$26.12	\$26.12	\$26.12	\$26.12
One week ago	\$26.12	\$26.12	\$26.12	\$26.12
One month ago	\$26.12	\$26.12	\$26.12	\$26.12
One year ago	\$24.61	\$24.61	\$24.61	\$24.61

HIGH	LOW
2026.12 Mar. 19	25.37 Jan. 1
25.37 Oct. 23	23.61 Jan. 2
23.61	23.61
23.61	23.61
23.61	23.61
23.61 Mar. 20	23.45 Jan. 2
23.45 Dec. 23	22.61 Jan. 2
22.61 Sept. 19	20.61 Sept. 12
23.25 June 21	19.61 July 6
23.25 Mar. 9	20.25 Feb. 16
19.74 Nov. 24	18.73 Aug. 11
18.84 Nov. 5	17.83 May 14
17.90 May 1	16.90 Jan. 27
16.90 Dec. 5	13.56 Jan. 3
14.81 Jan. 5	13.56 Dec. 6
15.90 Jan. 6	14.79 Dec. 15
18.21 Jan. 7	15.90 Dec. 16
18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo Valley and Birmingham.

SCRAP STEEL	July 2, 1946	June 25, 1946	May 28, 1946	July 3, 1945
July 2, 1946	\$19.17	\$19.17	\$19.17	\$19.17
One week ago	\$19.17	\$19.17	\$19.17	\$19.17
One month ago	\$19.17	\$19.17	\$19.17	\$19.17
One year ago	\$19.17	\$19.17	\$19.17	\$19.17

HIGH	LOW
1917 Jan. 2	18.92 May 22
19.17 Jan. 11	15.76 Oct. 24
19.17	19.17
19.17	19.17
22.00 Jan. 7	19.17 Apr. 10
21.83 Dec. 30	16.04 Apr. 9
22.50 Oct. 3	14.08 May 16
15.00 Nov. 22	11.00 June 7
21.92 Mar. 30	12.67 June 9
17.75 Dec. 21	12.67 June 8
13.42 Dec. 10	10.33 Apr. 29
13.00 Mar. 13	9.50 Sept. 25
12.25 Aug. 8	6.75 Jan. 3
8.50 Jan. 12	6.43 July 5
11.33 Jan. 6	8.50 Dec. 29
15.00 Feb. 18	11.25 Dec. 9
17.58 Jan. 29	14.08 Dec. 3

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.



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Iron and Steel Prices...

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 25¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15¢ per lb higher.

Basing Points	DELIVERED TO											
	Pitts- burgh	Chicago	Gary	Cleveland	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	10 Pacific Ports, Cars
INGOTS												
Carbon, re-rolling												
Carbon, forging	\$38	\$38	\$38	\$38	\$38	\$38	\$38					
Alloy	\$48.69	\$48.69				\$48.69						
BILLETS, BLOOMS, SLABS												
Carbon, re-rolling	\$39	\$39	\$39	\$39	\$39	\$39	\$39					\$51.14
Carbon, forging billets	\$47	\$47	\$47	\$47	\$47	\$47	\$47					\$59.14
Alloy	\$58.43	\$58.43				\$58.43						\$60.59
SHEET BARS	\$38	\$38		\$38		\$38	\$38	\$38				
PIPE SKELP	2.05¢	2.05¢					2.05¢	2.05¢				
WIRE RODS 15												
No. 5 to 3/22 in.	2.30¢	2.30¢		2.30¢	2.30¢						2.55¢	2.80¢
SHEETS												
Hot-rolled	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.625¢	2.425¢		2.975¢
Cold-rolled ¹	3.275¢	3.275¢	3.275¢	3.275¢		3.275¢	3.275¢		3.375¢	3.275¢		3.925¢
Galvanized (24 gage)	4.05¢	4.05¢	4.05¢		4.05¢	4.05¢	4.05¢	4.05¢	4.15¢	4.05¢		4.60¢
Enameling (20 gage)	3.80¢	3.80¢	3.80¢	3.80¢		3.80¢			3.90¢	3.80¢		4.45¢
Enameling (10 Gage)	3.20¢	3.20¢	3.20¢	3.20¢		3.20¢			3.30¢	3.20¢		3.85¢
Long tonnes ²	4.05¢	4.05¢	4.05¢									4.80¢
STRIP												
Hot-rolled 3/6 in. and under over 6 in.	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢		2.45¢ 2.35¢			2.45¢ 2.35¢		3.10¢ 3.00¢
Cold-rolled ⁴	3.05¢	3.15¢		3.05¢			3.05¢					3.15¢
Cooperage stock	2.65¢	2.65¢		2.65¢			2.65¢					2.91¢
Commodity cold-rolled	3.20¢	3.30¢		3.20¢			3.20¢					3.30¢
TINPLATE												
Standard cokes, base box	\$5.00	\$5.00	\$5.00		\$5.10			\$5.10	\$5.10			\$5.604 ¹¹
Electro, box	0.25 lb \$4.35 0.50 lb \$4.50 0.75 lb \$4.65	0.25 lb \$4.35 0.50 lb \$4.50 0.75 lb \$4.65	0.25 lb \$4.35 0.50 lb \$4.50 0.75 lb \$4.65					0.25 lb \$4.35 0.50 lb \$4.50 0.75 lb \$4.65	0.25 lb \$4.35 0.50 lb \$4.50 0.75 lb \$4.65			
BLACKPLATE												
29 gage ⁶	3.30¢	3.30¢	3.30¢					3.40¢	3.40¢			3.57¢
TERNES, MFG.												
Special coated, base box	\$4.55	\$4.55	\$4.55					\$4.85	\$4.65			
BARS												
Carbon steel	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢				2.85¢	3.15¢
Rail steel ⁶	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢					2.85¢	3.15¢
Reinforcing (billet) ⁷	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢			2.70¢	2.75¢
Reinforcing (rail) ⁷	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢				2.70¢	2.75¢
Cold-finished ⁸	3.10¢	3.10¢	3.10¢	3.10¢		3.10¢						
Alloy, hot-rolled	2.92¢	2.92¢				2.92¢	2.92¢					3.03¢
Alloy, cold-drawn	3.62¢	3.62¢	3.62¢	3.62¢		3.62¢						3.73¢
PLATE												
Carbon steel 13	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢		2.50¢					2.85¢
Floor plates	3.75¢	3.75¢										4.10¢
Alloy	3.79¢	3.79¢										4.27¢
SHAPES												
Structural	2.35¢	2.35¢	2.35¢		2.35¢	2.35¢					2.60¢	3.00¢
SPRING STEEL, C-R												
0.28 to 0.50 carbon	2.80¢			2.80¢								
0.51 to 0.75 carbon	4.30¢			4.30¢								
0.76 to 1.00 carbon	6.15¢			6.15¢								
1.01 to 1.25 carbon	8.35¢			8.35¢								
WIRE ⁹												
Bright 12	3.05¢	3.05¢		3.05¢	3.05¢							3.55¢
Galvanized												
Spring (high carbon)	4.00¢	4.00¢		4.00¢								4.50¢
PILING												
Steel sheet	2.65¢	2.65¢				2.65¢						3.20¢

PRICES

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

BASING POINT	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation		Subject to negotiation			
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt.	22.99	24.67	17.01	17.47	20.69	25.29
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	22.99	24.67	17.01	17.47	20.69	25.29
Billets, P'gh, Chi, Canton, Newark, N. J., Watervliet, Syracuse, Balt.	Subject to negotiation		Subject to negotiation			
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Newark, N. J., Ft. Wayne, Titusville	22.99	24.67	17.01	17.47	20.69	25.29
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.05	25.97	20.02	20.56	24.34	29.75
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.05	25.97	20.02	20.56	24.34	29.75
Plates, P'gh, Middletown, Canton	31.38	29.21	23.28	23.80	28.67	33.00
Shapes, structural, P'gh, Chi	27.05	25.97	20.02	20.56	24.34	29.75
Sheets, P'gh, Chi, Middletown, Canton, Balt.	38.95	36.79	28.67	31.38	35.16	38.49
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.43	23.28	18.39	18.93	25.97	37.87
Strip, c-f, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	32.46	30.30	23.80	24.34	34.62	56.26
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila.	27.05	25.97	20.02	20.56	24.34	29.75
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Newark, N. J., Syracuse	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton, (4 in. to 6 in.)	72.09	72.09	.....	68.49	.....	.....

TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, O.)

An increase of 8.2 pct applies to base price and extras

	Base per lb
High speed	67¢
Straight molybdenum	54¢
Tungsten-molybdenum	57½¢
High-carbon-chromium*	43¢
Oil hardening*	24¢
Special carbon*	22¢
Extra carbon*	18¢
Regular carbon*	14¢

Warehouse prices on and east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	per lb
Field grade	3.90¢
Armature	4.25¢
Electrical	4.75¢
Motor	5.425¢
Dynamo	6.125¢
Transformer 72	6.625¢
Transformer 65	7.625¢
Transformer 58	8.125¢
Transformer 52	8.925¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb No. 1 O.H., net ton	\$43.39
Angle splice bars, 100 lb	2.35
(F.o.b. basing points) per net ton	
Light rails (from billets)	\$49.18
Light rails (from rail steel)	49.18
base per lb	
Cut spikes	3.65¢
Screw spikes	5.55¢
Tie plate, steel	2.55¢
Tie plates, Pacific Coast	2.70¢
Track bolts	*4.75¢
Track bolts, heat treated, to railroads	*5.00¢
Track bolts, jobbers discount	63-5

*Plus an increase of 7 pct.

Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

Freight Rate Increase

• • • Delivered prices quoted are subject to increase effective July 1 reflecting 6 pct increase on railroad freight rates authorized by the Interstate Commerce Commission.

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless-clad		
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Pa.	21.00*	22.00
Nickel-clad		
10 pct, f.o.b. Coatesville, Pa.	18.72	.....
Inconel-clad		
10 pct, f.o.b. Coatesville..	26.00	.....
Monel-clad		
10 pct, f.o.b. Coatesville..	24.96	.....
Aluminized steel		
Hot dip, 20 gage, f.o.b. Pittsburgh	.....	9.00

*Includes annealing and pickling.

WIRE PRODUCTS

To the dealer, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points Named	Pacific Coast Basing Points†
	base per keg	
Standard wire nails	\$3.75	\$4.25
Coated nails	3.75	4.25
Cut nails, carloads	4.85	.....

	base per 100 lb	
Annealed fence wire	\$3.50	\$4.00
Annealed galv. fence wire	3.85	4.35

	base column	
Woven wire fence*	72	90
Fence posts, carloads...	74	91
Single loop bale ties††	72	97
Galvanized barbed wire**	79	89
Twisted barbed wire..	79	89

*15½ gage and heavier. **On 80-rod spools in carload quantities.

†Prices subject to switching or transportation charges.

††Add 50¢ a ton.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.....	\$8.50	\$17.00
15-lb coating I.C.....	9.50	19.00
20-lb coating I.C.....	10.00	20.00

ALLOY EXTRAS

Alloy Steel	Basic Openhearth		Electric Furnace	
	Bars and Bar-strip	Billets, Blooms and Slabs	Bars and Bar-strip	Billets, Blooms and Slabs
A 8600.....	0.676¢	\$13.52	1.196¢	\$23.92
A 8700.....	0.728	14.56	1.248	24.96
NE 9400.....	0.780	15.60	1.300	26.00
NE 9700.....	0.676	13.52	1.196	23.92
NE 9800.....	1.352	27.04	1.872	37.44
NE 9900.....	1.248	24.96	1.612	32.24

The extras shown are in addition to the base price of \$2.92 per 100 lb on finished products and \$53.43 per gross ton on semifinished steel, major basing points, as shown in table, opposite page, and are in cents per pound when applicable to bars and bar-strip and in dollars per gross ton when applicable to billets, blooms and slabs. When acid openhearth is specified and acceptable, add to basic openhearth alloy differential 0.27¢ per lb for bars and bar-strip and \$5.14 per gross ton for billets, blooms and slabs. Alloy price increases are retroactive to Mar. 1.

PRICES

WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills

(F.o.b. Pittsburgh only on wrought pipe)
base price—\$200.00 per net ton

Steel (butt weld)

	Black	Galv.
½-in.	60½	48
¾-in.	63½	52
1-in. to 3-in.	65½	54½

Wrought Iron (butt weld)

	177%	+4%
½-in.	24½	2%
¾-in.	28½	9½
1-in. and 1¼-in.	33	11%
2-in.	32%	11%

Steel (lap weld)

2-in.	58	46½
2½-in. and 3-in.	61	49½
3½-in. to 6-in.	63	51½

Wrought Iron (lap weld)

2-in.	24%	4%
2½-in. to 3½-in.	25%	7½
4-in.	28%	11%
4½-in. to 8-in.	27	10½

Steel (butt, extra strong, plain ends)

½-in.	58½	47½
¾-in.	62½	51½
1-in. to 3-in.	64	54

Wrought Iron (same as above)

½-in.	18%	+1½
¾-in.	25%	4%
1-in. to 2-in.	33	13

Steel (lap, extra strong, plain ends)

2-in.	56	45½
2½-in. and 3-in.	60	49½
3½-in. to 6-in.	63½	53

Wrought Iron (same as above)

2-in.	28½	8%
2½-in. to 4-in.	34	16½
4½-in. to 6-in.	32%	14%

On butt weld and lap weld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher on all butt weld.

BOILER TUBES

Seamless steel and lap weld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots

	Seamless	Lap-weld, Cold-Hot-Drawn Rolled
2 in. O.D. 13 B.W.G.	16.52	13.90
2½ in. O.D. 12 B.W.G.	22.21	18.70
3 in. O.D. 12 B.W.G.	24.71	20.79
3½ in. O.D. 11 B.W.G.	31.18	26.25
4 in. O.D. 10 B.W.G.	38.68	32.56

(Extras for less carload quantities)
40,000 lb or ft and over.....Base
30,000 lb or ft to 39,999 lb or ft.... 5 pct
20,000 lb or ft to 29,999 lb or ft.... 10 pct
10,000 lb or ft to 19,999 lb or ft.... 20 pct
5,000 lb or ft to 9,999 lb or ft.... 40 pct
2,000 lb or ft to 4,999 lb or ft.... 45 pct
Under 2,000 lb or ft.... 65 pct

CAST IRON WATER PIPE

	Per Net Ton
6-in. and larger, del'd Chicago....	\$60.80
6-in. and larger, del'd New York....	60.20
6-in. and larger, Birmingham....	52.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles or Seattle	74.00
For all rail shipment; rail and water shipment less.	
Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$5 a ton above 6-in.	

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BOLTS, NUTS, RIVETS, SET SCREWS

An increase of 7 pct applies to all listings.

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

	Base discount less case lots	Percent Off List
½ in. and smaller x 6 in. & shorter....	65½	
9/16 & ¾ in. x 6 in. & shorter....	63½	
¾ to 1 in. x 6 in. & shorter....	61	
1½ in. and larger, all lengths....	59	
All diameters over 6 in. long....	59	
Lag. all sizes	62	
Flow bolts	65	

Nuts, Cold Punched or Hot Pressed

	(Hexagon or Square)
½ in. and smaller	62
9/16 to 1 in. inclusive	59
1½ to 1½ in. inclusive	57
1½ in. and larger	56
On above bolts and nuts, excepting	
plow bolts, additional allowance of 10 pct	
for full container quantities. There is	
an additional 5 pct allowance for car-	
load shipments.	

Semifin. Hexagon Nuts U.S.S. S.A.E.

	Base discount less keg lots
7/16 in. and smaller	64
½ in. and smaller	62
½ in. through 1 in.	60
9/16 in. through 1 in.	59
1½ in. through 1½ in.	57
1½ in. and larger	56
In full keg lots, 10 pct additional discount.	

Stove Bolts

	Consumer
Packages, nuts loose	71 and 10
In packages	71
In bulk	80
On stove bolts freight allowed up to	
65¢ per 100 lb based on Cleveland, Chi-	
cago, New York on lots of 200 lb or over.	

Large Rivets

	(½ in. and larger)	Base per 100 Lb
F.o.b. Pittsburgh, Cleveland, Chi-		
cago, Birmingham		\$3.75

Small Rivets

	(7/16 in. and smaller)	Percent Off List
F.o.b. Pittsburgh, Cleveland, Chicago,		
Birmingham		65 and 5

Cap and Set Screws

	Consumer	Percent Off List
Upset full fin, hexagon head cap		
screws, coarse or fine thread, up to		
and incl. 1 in. x 6 in.		64
Upset set screws, cup and oval points		
Milled studs		46
Flat head cap screws, listed sizes....		36
Fillister head cap, listed sizes....		51
Freight allowed up to 65¢ per 100 lb		
based on Cleveland, Chicago or New York		
on lots of 200 lb or over.		

FLUORSPAR

Maximum price f.o.b. consumer's plant, \$30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

Exception

When the WPB Steel Div. certifies in writing the consumers need for one of the higher grades of metallurgical fluor spar specified in the table below the price shall be taken from the table plus items (1 and 2) from paragraph above.

	Base price per short ton
Effective CaF ₂ Content:	
70% or more	\$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer	\$5.45
Old range, non-bessemer	5.30
Mesaba, bessemer	5.20
Mesaba, non-bessemer	5.05
High phosphorus	5.05
Prices are for ore shipped on and after	
June 24, 1946, and for ore covered by	
adjustable pricing agreements authorized	
by Order No. 8, RMPR 113.	

METAL POWDERS

Prices are based on current market prices of ingots plus a fixed figure. F.o.b. shipping point, cents per lb., ton lots.
Brass, minus 100 mesh ... 18.5¢ to 20.25¢
Copper, electrolytic, 150 and 200 mesh ... 21½¢ to 23½¢
Copper, reduced, 150 and 200 mesh ... 20½¢ to 25½¢
Iron, commercial, 100, 200, 325, mesh 96 + % Fe ... 11¢ to 16¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots ... 4¢
Iron, hydrogen reduced, 300 mesh and finer, 98½ + % Fe, drum lots ... 63¢
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe. 27¢ to 42¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe ... 31¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe ... 90¢
Aluminum, 100 and 200 mesh ... 25¢
Antimony, 100 mesh ... 30¢
Cadmium, 100 mesh ... 14.40
Chromium, 100 mesh and finer ... 12.25
Lead, 100, 200 & 300 mesh ... 11½ to 15¢
Manganese, minus 325 mesh and coarser ... 44¢ to 61¢
Nickel, 150 mesh ... 51½¢
Silicon, minus 325 mesh and coarser ... 26¢ to 55¢
Solder powder, 100 mesh. 8½¢ plus metal
Tin, 100 mesh ... 58½¢
Tungsten metal powder, 98%-99%, any quantity, per lb. ... \$2.60
Molybdenum powder, 99%, in 200-lb kegs, f.o.b. York, Pa., per lb. ... \$2.60
Under 100 lb. ... \$3.00

*Freight allowed east of Mississippi.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	\$7.50*
Foundry, beehive (f.o.b. oven)	
Fayette Co., W. Va.	8.10
Connellsville, Pa.	9.00
Foundry, Byproduct	
Chicago, del'd	15.10
Chicago, f.o.b.	14.35
New England, del'd	16.00
Kearny, N. J., f.o.b.	14.40
Philadelphia, del'd	14.63
Buffalo, del'd	14.75
Portsmouth, Ohio, f.o.b.	12.85
Painesville, Ohio, f.o.b.	13.50
Erie, del'd	14.50
Cleveland, del'd	14.55
Cincinnati, del'd	14.60
St. Louis, del'd	15.10†
Birmingham, del'd	12.25

*Hand drawn ovens using trucked coal permitted to charge \$8.60 per ton plus transportation charges.

†Except producers situated in states other than Missouri, Alabama or Tennessee, sellers may charge a maximum delivered price of \$15.60 in the St. Louis Mo., and East St. Louis, Ill., switching districts.

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Per 1000
Super-duty brick, St. Louis....	\$76.05
First quality, Pa., Md., Ky., Mo., Ill., Ohio	60.40
First quality, New Jersey	65.90
Sec. quality, Pa., Md., Ky., Mo., Ill.	54.80
Sec. quality, New Jersey	57.70
Sec. quality, Ohio	52.95
Ground fire clay, net ton, bulk....	8.95

Silica Brick

Pennsylvania and Birmingham....	\$60.40
Chicago District	69.30
Silica cement, net ton (Eastern)....	10.60

Chrome Brick

	Per Net Ton
Standard chemically bonded, Balt., Plymouth Meeting, Chester	\$54.00

Magnesite Brick

Standard, Balt. and Chester....	\$76.00
Chemically bonded, Baltimore....	65.00

Grain Magnesite

	Per Net Ton
Domestic, f.o.b. Balt. and Chester in sacks (carloads)	\$43.48
Domestic, f.o.b. Chewelah, Wash. in bulk	22.00
in sacks	26.00
Clinker (dead burned) dolomite, per ton	
East, \$9.30; Midwest, add 10¢; Mo. Valley, add 20¢.	

PRICES

WAREHOUSE PRICES

Delivered metropolitan areas per 100 lb.

Cities	SHEETS			STRIP			Plates ¾ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot- Rolled (10 gage)	Cold- Rolled	Galvanized (24 gage)	Hot-Rolled		Cold- Rolled			Hot- Rolled A-8617-20	Cold- Finished	Hot- Rolled, A-8742-50 Ann.	Cold- Drawn, A-8617-20	Cold- Drawn A-8742-50 Ann.	
				6 in. and Under	Over 6 in.									
**Philadelphia.....	\$3.743	\$5.097	\$5.218a	\$4.272	\$4.172	\$5.022	\$3.855	\$3.916	\$4.072	\$4.522	\$3.016	\$7.116	\$7.372	\$8.422
New York.....	3.815	4.838 ¹	5.46	4.324	4.224	5.024	4.018	4.008	4.103	4.553	6.058	7.158	7.403	8.453
Boston.....	3.999	4.969 ³	5.674	4.456	4.356	4.965	4.162	4.162	4.294	4.594	6.21 ²	7.312	7.444	8.494
Baltimore.....	3.619	5.077	5.344	4.252	4.152	.....	3.844	4.009	4.052	4.502	6.109	7.209	7.352	8.402
Norfolk.....	3.996	.....	5.821	4.515	4.415	.....	4.221	4.252	4.315	4.615	.....	.....	.....	.....
Chicago.....	3.475	4.425	5.581	3.95	3.85	4.90 ⁶	3.80	3.80	3.75	4.20	5.80	6.90	.....	8.00
Milwaukee.....	3.612	4.562 ¹	5.537	4.087	4.077	5.037 ⁶	3.937	3.937	3.887	4.337	6.037	7.037	7.187	8.237
Cleveland.....	3.575	4.625	5.327	3.95	3.85	4.70 ⁶	3.65	3.838	3.60	4.20	6.006	7.106	6.95	8.00
Buffalo.....	3.575	4.625	5.20	4.169	4.069	4.919 ⁶	3.88	3.65	3.60	4.20	5.80	6.90	6.95	8.00
Detroit.....	3.675	4.725	5.45	4.05	3.95	.....	3.859	3.911	3.70	4.25	6.13	7.23	7.259	8.309
Cincinnati.....	3.65	4.70 ¹	5.275	4.025	3.925	4.961	3.911	3.941	3.861	4.461	6.15	7.25	7.311	8.361
St. Louis.....	3.622	4.572 ¹	5.581	4.097	3.997	5.181 ⁶	3.947	3.947	3.897	4.491	6.181	.....	7.331	.....
Pittsburgh.....	3.575	4.625	5.20	3.95	3.85	4.70	3.65	3.65	3.60	4.20	5.80	6.90	6.95	7.95
St. Paul.....	3.797	4.747	5.635	4.272	4.172	5.352	4.122	4.122	4.072	4.811	6.202	6.302	7.352	7.402
Omaha.....	4.018	5.668	5.965	4.493	4.393	.....	4.343	4.343	4.293	4.893	.....	.....	.....	.....
Indianapolis.....	3.745	4.795	5.37	4.12	4.02	4.99	3.88	3.88	3.83	4.43	6.13	.....	7.28	.....
Birmingham.....	3.675	.....	5.20	4.05	3.95	.....	3.80	3.80	3.75	4.903	.....	.....	.....	.....
Memphis.....	4.19	4.885	5.715	4.565	4.465	.....	4.315	4.315	4.265	4.78	.....	.....	.....	.....
New Orleans.....	4.283*	5.304	5.808	4.658	4.558	.....	4.408	4.408*	4.358*	5.079	.....	.....	.....	.....
Houston.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles.....	4.85	6.60 ¹	6.55	5.30	5.20	.....	4.80	4.70	4.65	6.03	.....	.....	.....	.....
San Francisco.....	4.12	6.87	6.35	4.60	4.50	4.15	4.15	4.15	4.30	5.78	.....	.....	.....	.....
Seattle.....	4.87 ⁵	7.27 ²	6.40	4.60	4.50	.....	5.00 ⁵	4.70 ⁵	4.60 ⁵	6.23	.....	.....	.....	.....
Portland.....	4.87 ⁴	6.82 ²	6.20	5.10	5.00	.....	5.00 ⁴	4.70 ⁴	4.70 ⁴	5.98	8.15	.....	9.20	.....
Salt Lake City.....	4.75	.....	6.62 ⁷	5.88	5.78	.....	5.23 ⁷	5.23 ⁷	5.13	5.35	.....	.....	.....	.....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities; bars, 1500 lb base.

NE ALLOY BARS: 1000 to 39,999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 450 to 3749 lb; (4) 300 to 4999 lb; (5) 300 to 10,000 lb; (6) 2000 lb and over; (7) 3500 lb and over.

(*) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

* Add 0.271¢ for sizes not rolled in Birmingham.

** City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

PIG IRON PRICES

Per gross ton, subject to retroactive adjustment.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem.....	27.00	27.50	28.00	28.50	.....	Boston.....	Everett.....	0.50	27.50	28.00	28.50	29.00	.....
Birdsboro.....	27.00	27.50	28.00	28.50	32.00	Boston.....	Birdsboro-Steelton...	4.02	.....	.....	.....	.....	38.02
Birmingham.....	21.50	22.98	.....	27.40	.....	Brooklyn.....	Bethlehem.....	2.50	29.50	30.00	30.50	31.00	.....
Buffalo.....	25.50	26.50	27.00	27.50	32.00	Brooklyn.....	Birdsboro.....	2.92	.....	.....	.....	.....	34.92
Chicago.....	26.00	26.50	26.50	27.00	.....	Canton.....	Clev.Ygatin, Sharpsvil.	1.39	27.39	27.89	27.89	28.39	.....
Cleveland.....	28.00	28.50	28.50	27.00	.....	Canton.....	Buffalo.....	3.19	.....	.....	.....	.....	35.10
Detroit.....	28.00	28.50	28.50	27.00	.....	Cincinnati.....	Birmingham.....	4.08	28.58	28.94	.....	.....	.....
Duluth.....	28.50	27.00	27.00	27.50	.....	Cincinnati.....	Hamilton.....	1.11	.....	.....	27.61	.....	.....
Erie.....	28.00	28.50	27.00	27.50	.....	Cincinnati.....	Buffalo.....	4.40	.....	.....	.....	.....	36.40
Everett.....	27.00	27.90	28.00	28.50	.....	Jersey City.....	Bethlehem.....	1.53	28.53	29.03	29.53	30.03	.....
Granite City.....	28.00	28.50	26.50	27.00	.....	Jersey City.....	Birdsboro.....	1.94	.....	.....	.....	.....	33.94
Hamilton.....	28.00	28.50	26.50	.....	.....	Los Angeles.....	Provo.....	4.95	28.95	29.45	.....	.....	.....
Neville Island.....	28.00	28.50	26.50	27.00	.....	Los Angeles.....	Buffalo.....	15.41	.....	.....	.....	.....	47.41
Provo.....	24.00	24.50	.....	.....	.....	Mansfield.....	Cleveland-Toledo.....	1.94	27.94	28.44	28.44	28.94	.....
Sharpsville ¹	26.00	26.00	26.50	27.00	.....	Mansfield.....	Buffalo.....	3.36	.....	.....	.....	.....	35.36
Sparrows Point.....	27.00	27.50	.....	.....	.....	Philadelphia.....	Swedeland.....	0.84	27.84	28.34	28.84	29.34	.....
Steelton.....	27.00	.....	.....	.....	32.00	Philadelphia.....	Birdsboro.....	1.24	.....	.....	.....	.....	33.24
Swedeland.....	27.00	27.50	28.00	28.50	.....	San Francisco.....	Provo.....	4.95	28.95	29.45	.....	.....	.....
Toledo.....	28.00	28.50	26.50	27.00	.....	San Francisco.....	Buffalo.....	15.41	.....	.....	.....	.....	47.41
Youngstown.....	26.00	26.50	26.50	27.00	.....	Seattle.....	Provo.....	4.95	28.95	29.45	.....	.....	.....
						Seattle.....	Buffalo.....	15.41	.....	.....	.....	.....	47.41
						St. Louis.....	Granite City.....	0.50	26.50	27.00	27.00	27.50	.....
						St. Louis.....	Buffalo.....	7.07	.....	.....	.....	.....	39.0

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, \$33.00 and \$34.00, respectively. Newberry Brand of Lake Superior charcoal iron \$39.00 per g.t., f.o.b. furnace. Delivered to Chicago, \$42.34.

High phosphorus iron sells at Lyles, Tenn., at \$28.50.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each

0.50 pct manganese content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—\$32.00; f.o.b. Buffalo—\$33.25. Add \$1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for prices of comparable analysis.

FERROALLOY PRICES

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.
 Carload lots (bulk) \$135.00
 Less ton lots (packed) 148.50
 F.o.b. Pittsburgh 139.50
 \$1.70 for each 1% above 82% Mn; penalty, \$1.70 for each 1% below 78%.
 Briquets—cents per pound of briquet, freight allowed, 66% contained Mn.
 Eastern Central Western
 Carload, bulk .. 6.05 6.30 6.60
 Ton lots 6.65 7.55 8.55
 Less ton lots .. 6.80 7.80 8.80

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.
 16-19% Mn 19-21% Mn
 3% max. Si 3% max. Si
 Carloads \$35.00 \$36.00
 Less ton 47.50 48.50
 F.o.b. Pittsburgh, Chicago 40.00

Manganese Metal

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed.
 96-98% Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.
 Carload, bulk 30
 L.c.l. lots 32

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
 Carloads 32
 Ton lots 34
 Less ton lots 36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.
 Carloads Ton Less
 0.10 max. C, 0.06% P, 90% Mn 21.00 21.40 21.65
 0.10% max. C 20.50 20.90 21.15
 0.15% max. C 20.00 20.40 20.65
 0.30% max. C 19.50 19.90 20.15
 0.50% max. C 19.00 19.40 19.65
 0.75% max. C 16.00 16.40 16.65
 7.00% max. Si 16.00 16.40 16.65

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed. 65-70% Mn, 17-20% Si, 1.5% max. C.
 Carload, bulk 6.05
 Ton lots 6.70
 Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet. 5.80
 Ton lots 6.30
 Less ton lots 6.55

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, \$51.25 f.o.b. Keokuk, Iowa; \$48.00 f.o.b. Jackson, Ohio; \$49.25 f.o.b. Niagara Falls. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots, packed.
 Eastern Central Western
 96% Si, 2% Fe.. 13.10 13.55 16.50
 97% Si, 1% Fe.. 13.45 13.90 16.80

Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si.
 Eastern Central Western
 Carload, bulk .. 3.60 3.75 3.90
 Ton lots 4.05 4.55 4.60
 Less ton lots... 4.45 4.80 4.85

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.
 Eastern Central Western
 50% Si 7.05 7.50 7.65
 75% Si 8.55 8.70 9.25
 30-90% Si 9.50 9.65 10.15
 90-95% Si 11.80 11.95 12.40

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.
 Eastern Central Western
 0.06% C 23.00 23.40 24.00
 0.10% C 22.50 22.90 23.50
 0.15% C 22.00 22.40 23.00
 0.20% C 21.50 21.90 22.50
 0.50% C 21.00 21.40 22.00
 1.00% C 20.50 20.90 21.50
 2.00% C 19.50 19.90 20.50
 66-71% Cr, 4-10% C ... 14.50 14.90 15.00
 62-66% Cr, 5-7% C 15.05 15.45 15.55
 Briquets—contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.
 Eastern Central Western
 Carload, bulk .. 9.20 9.50 9.90
 Ton lots 9.80 10.30 11.30
 Less ton lots... 10.10 10.60 12.10

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66.71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.
 High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
 Eastern Central Western
 Carload 15.60 16.00 16.10
 Ton lots 16.65 17.30 18.50
 Less ton lots... 17.30 17.95 19.15
 Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.
 Eastern Central Western
 Carload 20.00 20.40 21.00
 Ton lots 21.00 21.65 22.85
 Less ton lots... 22.00 22.65 23.85

Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed. 97% min. Cr, 1% max. Fe.
 Eastern Central Western
 0.20% max. C .. 83.50 85.00 86.25
 0.50% max. C .. 79.50 81.00 82.25
 9.00% min. C .. 79.50 81.00 82.25

Chromium—Copper

Contract price, cents per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si.
 Shot or ingot 45¢

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.
 30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.
 Eastern Central Western
 Carloads 13.00 13.50 15.55
 Ton lots 14.50 15.25 17.40
 Less ton lots... 15.50 16.25 18.40

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.
 16-20% Ca, 14-18% Mn, 53-59% Si.
 Eastern Central Western
 Carloads 15.50 16.00 18.05
 Ton lots 16.50 17.35 19.10
 Less ton lots... 17.00 17.85 19.60

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1¢ for central zone; 5¢ for western zone.
 Cast Turnings Distilled
 Ton lots \$1.35 \$1.75 \$4.25
 Less ton lots... 1.60 2.00 5.00

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.
 Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.
 Eastern Central Western
 Ton lots 12.00 12.75 14.75
 Less ton lots... 12.50 13.25 15.25
 Alloy 5: 50-56% Cr, 4-6% Mn, 13-50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.
 Ton lots 11.75 12.50 14.50
 Less ton lots... 12.25 13.00 15.00

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.
 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe.
 Eastern Central Western
 Ton lots 12.00 12.85 14.60
 Less ton lots... 12.50 13.35 15.10

Other Ferroalloys

Ferrotungsten, standard, lump or ¼X down, packed, f.o.b. plant Niagara Falls, Washington, Pa., York, Pa., per pound contained T, 5 ton lots, freight allowed... \$1.88
 Ferrovandium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.
 Openhearth \$2.70
 Crucible \$2.80
 High speed steel (Frimos) \$2.90
 Vanadium pentoxide, 88-92% V₂O₅ technical grade, contract basis, per pound contained V₂O₅ \$1.10
 Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb.
 Ton lots \$2.25
 Less ton lots \$2.30
 Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo 95¢
 Calcium molybdate, 40-46%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo 80¢
 Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo 80¢
 Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo 80¢
 Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti \$1.23
 Less ton lots \$1.25
 Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti \$1.35
 Less ton lots \$1.40
 High-carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads \$142.50
 Ferrophosphorus, 18%, electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with \$3 unitage freight equalled with Rockdale, Tenn., per gross ton \$58.50
 Ferrophosphorus, Electrolytic, 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage freight equalled with Nashville, per gross ton \$75.00
 Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
 Carloads lots 14¢
 Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy
 Carload, bulk 4.60¢
 Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload 5.75¢
 Ton lots 7.25¢
 Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
 Car lots 8.00¢
 Ton lots 8.75¢
 Less ton lots 9.25¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.
 Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.
 Eastern Central Western
 Less ton lots... \$1.30 \$1.3075 \$1.329

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.
 Ton lots \$1.89 \$1.903 \$1.935
 Less ton lots... 2.01 2.023 2.055

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.
 Less ton lots... \$2.10 \$2.1125 \$2.1445

Silcaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
 Carload lots 25¢
 Ton lots 26¢
 Silvaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
 Carload lots 58¢
 Ton lots 59¢
 Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.
 No. 1 87.5¢
 No. 6 60¢
 No. 79 45¢
 Bortram, f.o.b. Niagara Falls
 Ton lots, per pound 45¢
 Less ton lots, per pound 50¢

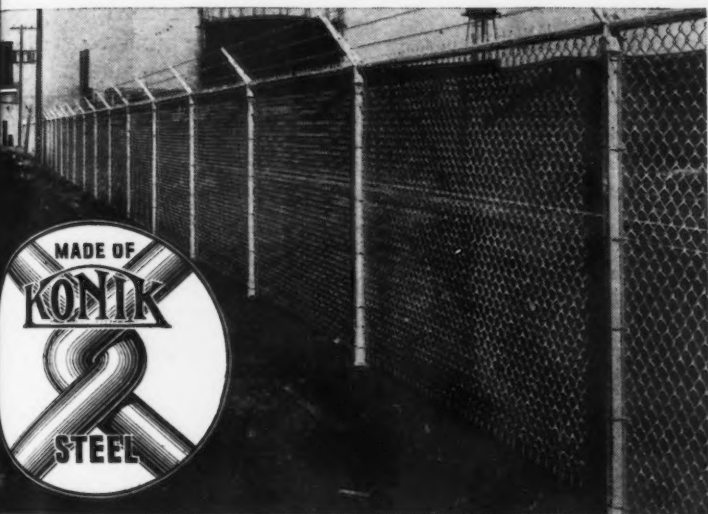
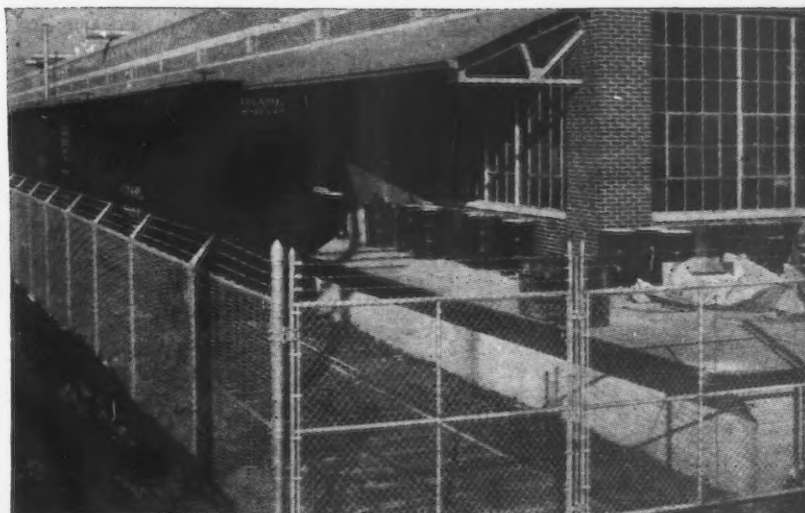
CONTINENTAL *Chain Link* FENCE

ENGINEERED FOR PROTECTION

Continental fence has 14 distinctive construction features including heavier line posts . . . stronger and more easily operated gates . . . improved pivot-type hinges . . . self-locking barb arms . . . and 20% more ties . . . fabric of rust-resistant, full gauge wire of KONIK steel with heavy uniform zinc coating.

If you want to guard against trespassing and vandalism, lessen fire hazards, prevent accidents, and control the use of your property, you can't beat Continental fence. It combines style with durability and positive protection.

Continental fence is designed for your installation by competent fence engineers, then custom-built for quick erection on the site.



MADE OF **KONIK** STEEL FOR LONGER LIFE

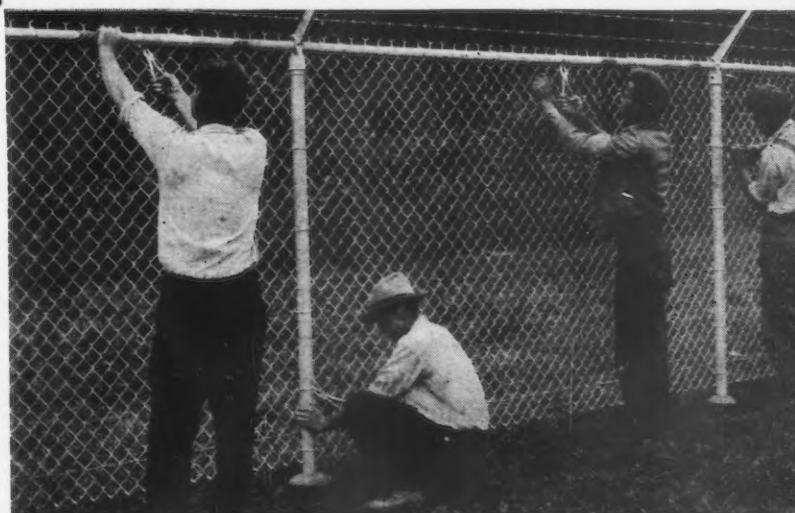
KONIK is the registered tradename for the patented steel containing copper, nickel and chromium used in Continental Chain Link fence fabric. KONIK possesses a greater tensile strength and higher elastic limit and is rust-resistant "clear through."

All this greater strength and rust-resistance . . . all this "clear through" quality . . . all the extra values of this modern steel now come to you only in Continental Chain Link Fence . . . and you get them at no added cost. No other fence gives you KONIK steel for longer fence life.

TAILORED TO FIT YOUR PROPERTY

Experienced fence engineers plan and help erect Continental Chain Link fence anywhere. No matter what your property protection problem, Continental engineers will work with you in laying out the most effective and economical installation. Your fence will be planned to harmonize with the character of your property, and provide the type of protection you want.

Correct and economical construction can be done by trained erection crews. When local labor is to be used, Continental can supply a competent foreman and inspection service. Write today for FREE fence manual.



CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized,

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ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

The B-29 Tail-skid Used "The Toughest Steel Known"

When the A. O. Smith Corporation of Milwaukee, Wisconsin, was given the important assignment of designing and manufacturing the complete landing gear for the B-29 Superfortress, many different kinds of materials with specific physical and chemical properties had to be engineered into the design. Take the tail-skid, for instance.

Normally the B-29 lands only on the nose landing gear and the two main wing landing gears. But, should it land tail first, the tail-skid must absorb a tremendous

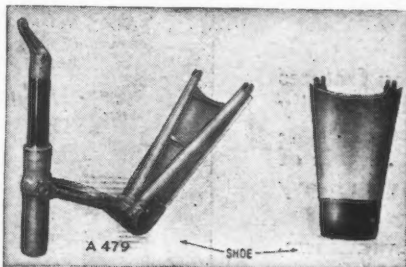


R-895. Specimens of the thousands of Amsco manganese steel tail-skid shoes made for Smithway B-29 tail-skid landing gear.

impact and have what it takes to prevent serious damage to a highly valuable plane.

Now the part of the tail-skid that actually contacts the ground is the tail-skid shoe, shown in Picture A-479, and the material in this shoe must be endowed with the right physical properties for the rugged service demanded of it. During exhaustive tests and experiments with various types of material, austenitic manganese steel, with its toughness that nullifies shocks and stresses and its work-hardening property which develops remarkable abrasion resistance, definitely proved its superior ability to take the unprecedented punishment involved.

Austenitic manganese steel was specified for the skid shoes on all



A-479. Amsco manganese steel tail-skid shoe fastened to the support truss of the B-29 Superfortress tail-skid.

Smithway B-29 tail-skid landing gear. Some of these Amsco castings are shown in R-895. This was only one of the war-time uses of manganese steel.

Austenitic manganese steel was the material chosen for all American helmets in both wars, for the same incomparable toughness that makes manganese steel castings indispensable in many industrial applications.

Joliet Steel Limited, Joliet, Quebec, owned by American Brake Shoe Company, produces and sells Amsco Manganese Steel Castings in Canada.

AMSCO

Foundries at

Chicago Heights, Ill.; New Castle, Del.;
Denver, Colo.; Oakland, Calif.;
Los Angeles, Calif.; St. Louis, Mo.

Offices in Principal Cities

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS • ILLINOIS

AMERICAN
Brake Shoe
COMPANY

NEWS OF INDUSTRY

Electrical Appliance Output Making Rapid Gains at Westinghouse

New York

• • • Evidence that an important section of the nation's electrical manufacturing industry is making rapid strides toward overcoming strike-enforced production delays and material shortages was presented recently.

Gwilym A. Price, president of the Westinghouse Electric Corp., disclosed that his company's electric appliance division is now turning out approximately 1000 refrigerators a day—about 50 pct of its normal prewar output—and is even exceeding its prewar record production of electric irons and roasters. Production of these smaller appliances is running at approximately 3000 units a day.

Following a meeting of the Westinghouse board of directors, Mr. Price reported that Westinghouse received \$191,817,000 worth of new orders in the first five months of this year. This new business brought the company's backlog of unfilled orders at the end of May to \$421,979,000.

"We are making good progress now in converting this backlog into sales billed," Mr. Price said, "and we are regaining some of the ground lost during the recent 4-month shutdown due to a strike."

If the company's plans are not upset by shortages of materials furnished by its outside suppliers, Mr. Price pointed out, it is hopeful of substantially exceeding full prewar output of all electric appliances now in production by the end of the year.

Equally encouraging progress has been made during the six post-strike weeks in accelerating production of heavy industrial apparatus, despite the handicap of severe shortages in some categories of steel and copper, Mr. Price said. For example, the company's East Pittsburgh divisions have attained approximately 90 pct of the production rate planned for before the strike.

Indicative of the production drive at Westinghouse is the fact that 27,000 persons are now employed at the East Pittsburgh divisions com-

**Wire rope "architect" at work
... for YOU!**



To give the finished product maximum service, safety and economy, Macwhyte Wire Rope is carefully blueprinted by "architects" before any actual manufacturing starts. These men are Macwhyte's highly skilled design engineers.

Such things as size and quality of wires and strands, degree of flexibility, bearing surface, core, etc., must be accurately de-

termined. The engineer's calculations must be perfect to produce a rope in which all parts fit uniformly and work together as a team to best meet operating conditions.

Proper designing is just one example of the thoroughness Macwhyte exercises at every step in planning and producing wire rope. No effort is spared to make it the *correct* rope for your equipment.

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SOLVES DIFFICULT CLEANING AND PICKLING PROBLEMS FOR LARGE MANUFACTURING PLANT

Case No. 43:

A large Midwestern manufacturer of farm machinery, who had previously used sand-blast, tumbling, shot-blast and wire-brush methods for removing rust and scale, shifted to Troxide. Not only did Troxide do a quicker job, with less labor, but it also eliminated pitting or etching of smooth machined surfaces.

The same manufacturer then employed Troxide for the removal of heat-treat scale from axle shafts. This work was previously done by shot-tumbling, and was unsatisfactory because the heavy shafts tore the barrels apart in short order. Troxide proved satisfactory in every respect on this extremely heavy job.

TROXIDE is the safe, modern chemical for pickling and bright-dipping. It eliminates the dangers of toxic fumes and acid burns. It removes rust and scale without materially attacking the good metal. As a pickling agent, it is easier to prepare, more effective, and longer-lasting than the conventional acid bath. All these advantages of Troxide make it less expensive to use than other materials and methods.

What is your pickling problem? Perhaps Troxide is the answer. Write Troxide across your letterhead or business card and mail.

TROXIDE

Suppliers:

South, Midwest and West: Waverly Petroleum Products Co., Drexel Bldg., Philadelphia 6, Pa.

East: Safety & Maintenance Co., Inc., 601 W. 26th St., New York 1, N. Y.

pared with 25,870 at the end of Dec.

Production of transformers at the company's plant in Sharon, Pa., is currently running at a rate 75 pct ahead of its 1939 level and 67 pct above the average rate for the years 1938 through 1940 inclusive. About four-fifths as many persons are employed as in December 1945.

At the company's appliance plant in Mansfield, Ohio, employment today is within 400 of the prewar normal figure of 4800 employees and workers are being added at the rate of 40 a day. By August this plant expects to exceed its wartime employment peak. An expansion program involving nearly \$12,000,000 at the Mansfield plant and the company's appliance plant in East Springfield, Mass., will greatly increase the capacity of these factories and enable them to produce a wider range of appliances by the end of the year.

John H. Ashbaugh, Westinghouse vice-president in charge of its electric appliance division listed the following appliances which "consumers may expect to find on sale in increasing volume within the next six months:" A 7 cu. ft. refrigerator, a medium priced electric range, the Laundromat, which is an automatic washer, electric automatic irons, roasters, electric water heaters, vacuum cleaners and electric fans.

"Additional models of major appliances," Mr. Ashbaugh added, "will be coming off the assembly lines by the end of 1946. Some of these may be available in limited quantities to consumers even before that time."

To prevent interruption of production while construction proceeds on the new factory building at Mansfield, a conveyor line has just been installed amid the open structural steel work of the new building. This conveyor carries parts from the enameling plant through the unfinished building to the assembly lines in the present manufacturing building.

Meanwhile thousands of electric ranges which were partially assembled before the strike are now being taken from storage, equipped with surface heating elements and shipped to distributors throughout the country. Mass production of these heating elements was held up because of the necessity of replacing a special hydraulic press which could not be reconverted.

HOW **T & W** MAKES AXLE *Forgings*

THAT COST LESS AT THE POINT OF ASSEMBLY

This front axle is forged from a 4 inch round-cornered steel billet 11 1/2 inches long. The first operation involves heating the stock to forging temperature and forming a tong hold.

With this set of forging dies the preliminary operations are performed. To get continuous grain flow and fibre structure throughout the length of this forging requires careful gathering and drawing of the stock in the drawing and edging impressions, after which the forging is roughly formed in the blocking impression, which is in the center of the dies. Hot working the metal with these closed impression dies improves metal quality and concentrates strength, toughness and fatigue resistance at points where greatest stress and shock occur in service.

Front axle for truck;
70 5/8 inches long be-
tween the pivot centers;
weight, 185 lbs.; requires
two sets of dies to forge it.

With these dies the front axle forging is formed to the exact dimensions specified. The finished forging as it came from these dies included flash, or unformed metal, around the edge of the forging, which was trimmed off before the photograph of the axle was taken. The result of the hot working of the metal in these dies produces a forging to close tolerances and reduces the subsequent machining and finishing to a minimum.

● Consult a T&W Forging Engineer about the development of maximum metal quality by forging metal in closed impression dies, and how to obtain reductions in cost of machining and finishing.



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In the case of the die part illustrated, impact-resistant Absco-Meehanite Castings were produced which not only withstood repeated heavy blows by an air hammer, but provided the rigidity and wear resistance that were also needed to hold its shape in the forming of stainless steel.

If your need for castings is on a production-schedule basis . . . if "unusual castings for unusual service" is of particular interest to you . . . if you think that American Brake Shoe Company's practical knowledge of foundry techniques may be of help to you, write us — in detail.

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| 2. Impact Resistance | 4. Wear Resistance | 8. Machinability |
| | 5. Heat Resistance | 9. Pressure Tightness |
| | 6. Toughness | 10. Vibration Absorption |

4468

NEWS OF INDUSTRY

Belgian Auto Output Hampered by Lack Of Items at Big Plants

Brussels

• • • Shortages of electrical equipment, textiles, and other accessories are preventing the expansion of output in the Ford, Chrysler, and General Motors assembly plants that turned out 80 pct of Belgium's passenger cars and trucks before the war. In place of assembling the units, most of the cars and trucks are being imported virtually completely assembled at considerably increased costs.

In today's conditions of artificial demand in a transportation starved market, the added items of a heavy duty on complete cars and \$350 or \$400 extra freight on Ford are relatively unimportant. The big three American producers as well as the French producers Renault and Citroen who formed the strongest competition are racing to get their assembly plants in Belgium into operation to avoid the import duty as well as excessive freight charges.

Newcomers to the Belgian passenger car market are the British light automobiles which are being imported in small quantities today. The British producers owned no assembly plants in Belgium before the war, and are engaged only in exporting completed units. They are selling at what Belgian officials call excessive prices, and it seems likely that when the French Renault 7 hp model is arriving in ample quantities the price comparison between the two (75,000 francs Belgian for the British 7 hp model, and 51,000 for the Renault) will make the competition difficult for the across-channel movement.

But the prewar favorite in the Belgian market was the American passenger car, and in comparison to the above prices for the light models, Belgians consider a 90,000 franc price level for the three low-price American models to be a big bargain. When the heavy freight charges are considered, the price is competitive. The General Motors plant at Antwerp was virtually completely destroyed by allied bombing during the war, and the firm has leased another building for temporary assembly lines until rebuilding can be completed. Ford was more fortunate, and although their plant suffered some damage it is

The CONE AUTOMATIC MACHINE COMPANY



sees many

GOOD THINGS AHEAD

It is reported that

U. S. Rubber promises that its solid neoprene tires will reduce the power consumption of materials handling equipment as much as 60%.

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Shell Development Company has patent rights to a new internally cooled piston in which the upper end of the connecting rod forms the top of the piston.

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Glenn L. Martin Co. will make commercially available their war-developed process for printing photographs on almost any surface.

get ready with CONE for tomorrow

B. L. McClure Inc. of Norwalk, Ohio, has been licensed to manufacture a limited number of Hickey engines. This 2-cycle engine has variable compression adapting it to various fuels and loads.

get ready with CONE for tomorrow

Du Pont has announced a new plastic, called "Teflon", which resists acids including boiling sulphuric and aqua regia.

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Promenette Radio & Television Corp. of Buffalo will make the electrical circuits on its radio sets by spraying metal lines on a plastic base.

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Cleveland Transit System reports that its electrically heated switches performed well through last winter.

get ready with CONE for tomorrow

Eastman Kodak has two new photographic papers that can be developed in one minute, fixed in two and washed in four.

Chance-Vought has developed a building panel made of balsa wood surfaced with aluminum sheets.

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The International Ice Patrol will go into service again equipped with planes and radar.

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A Westinghouse engineer prophesies the use of gas turbines in ships and central power stations.

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Allis-Chalmers reports that the 3500 h.p. multistage gas turbine that it designed and built for the Navy has been operated at a gas temperature of 1350 F.

The Bunker Hill Naval Air Station at Peru, Indiana, has had three winters' experience with runways made with a cement dispersing agent. There seems to be no deterioration from freezing or de-icing chemicals.

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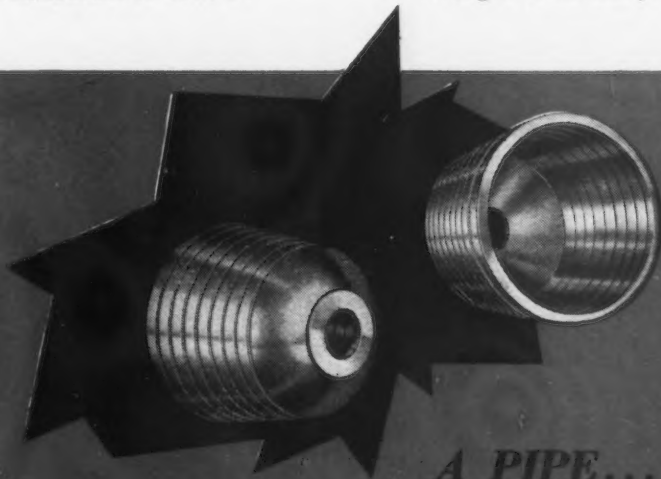
Ford Motor Co. has patents on an amphibious vehicle that looks like a small edition of the Army's famous "duck".

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Buckminster Fuller's Dymaxion house is being readied for mass production by Beech Aircraft of Wichita. It is made largely of aluminum, weighs four tons, has 1017 sq. ft. of floor space and will sell for \$6500.

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Monsanto has a chemical treatment for cotton called "Syton" that is claimed to increase the strength of cotton yarn 40%.



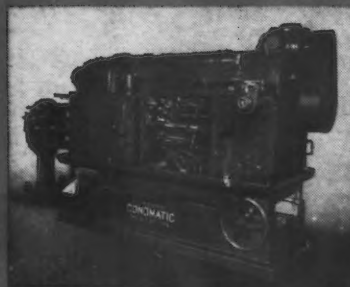
A PIPE... for You and for the 1 1/2" 8-Spindle Conomatic

The walls of this aluminum pipe bowl are machined to eggshell thickness, uniformly, with quality finish and with 15-second regularity. The Conomatic is adaptable for machining a variety of parts and built to handle tough or free-machining stock in its stride. Follow these pages to keep well informed on up-to-date automatic production.

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142—THE IRON AGE, July 4, 1946

largely repaired. Although the product was distinctly American, these assembly plants before the war used springs, textiles, glass, wheels, batteries, and many other items from local concerns. It is the inability to procure these materials in sufficient quantities locally that is holding up the assembly program in Belgium. For an industry that employed 3000 men in 1938, there are only about 500 men employed today.

To take the place of the 22,000 passenger cars that were assembled a year in prewar Belgium, the government made an allocation of 18 millions of the country's store of dollars for the purchase of 16,000 American cars to be imported from America in 1946. Deliveries to date have been far behind schedule, and Belgian transport officials expect only about 10,000. There is an officially estimated backlog demand of about 50,000 cars before the Belgian market assumes its normal pattern.

The history of the Belgian motor car industry was one of vainly attempting to protect the home industry up until 1935, when the government decided that the policy was resulting only in the artificial maintenance of the price structure on an uneconomic level. A compromise system was developed which maintained a fairly high duty on the importation of completed vehicles, but which reduced the rates on disassembled units and spares to almost nil. Since that year, activities of the American producers have expanded, and the two French firms mentioned above have also shared in the market. Fiat, from Italy, also shared in the light car market, and German heavy trucks were used.

The low standard of costs for prewar Belgian labor, despite a high standard of craftsmanship and living, made Belgium popular with the foreign producers, and many of them were carrying on substantial re-exporting programs from their Belgian plants. Labor costs have officially gone up 2.4 times for all of Belgium since 1939, and the automotive industry estimates the figure in its industry at three times. In addition this industry in common with all others will bear increased costs amounting to 15 pct from the broad social program.

The industry expects the planned customs union with the Netherlands to expand the demand for passenger cars assembled in Belgium within the next 2 or 3 yr.



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NEWS OF INDUSTRY

Plans Improvements In Diesel Design to Meet Threat of Gas Turbine

Louisville, Ky.

• • • Better overall efficiency of the diesel engine is aimed to offset the threat of the gas turbine, W. C. Burgy, supervisor of engine sales training, Caterpillar Tractor Co., declared before a recent



Mr. Burgy

meeting of the Louisville, Ky., chapter of the National Assn. of Power Engineers.

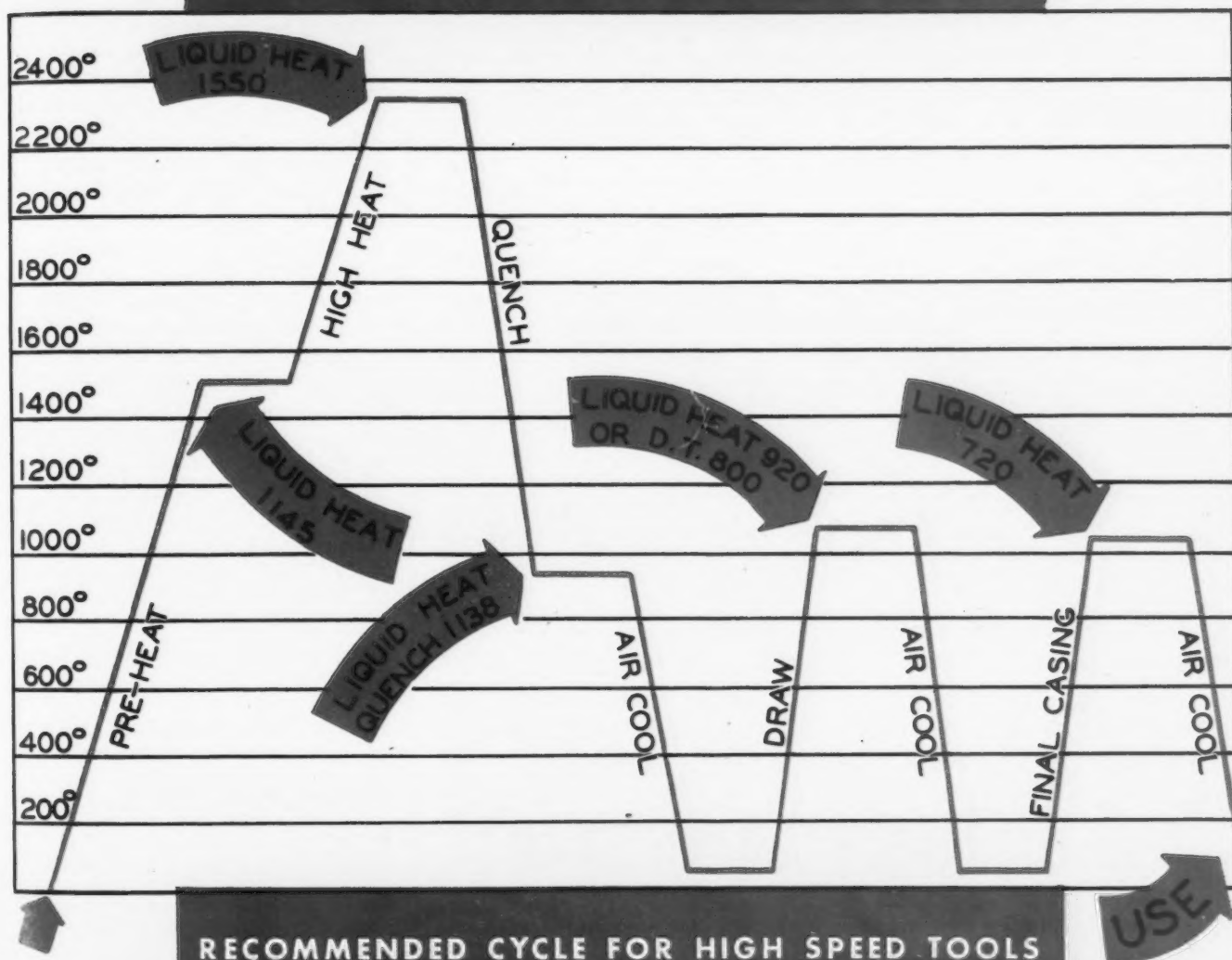
The improvements contemplated on the present diesel engine are higher rotative speeds, increased brake-

mean-effective-pressure and better thermal efficiency, it was said. The improvements in design and the increased acceptance by the trade of a very broad field of industry during the 25 yr has proven the worth of the diesel engine as a source of power, Mr. Burgy said.

The leadership of the diesel engine as a prime mover is for the first time having its position challenged by the invention of a basically new type of power, Mr. Burgy said. The challenger, the gas-turbine, is practically ready to emerge from the experimental laboratory to take its place in industry. Its overall efficiency is guaranteed, for comparatively large size units, to be 29 pct. Mr. Burgy reported that theoretically at least, this figure can be improved several percent providing the metallurgical engineer can produce a metal suitable for turbine blades to withstand a constant heat of approximately 1700° F.

The demands of World War II created intensive research in all branches of engineering of the diesel industry, he continued. This research is now being speeded up and ideas applied to meet the threat of the gas turbine. The extent to which rotative speeds can be increased will be limited to the progress made by the metallurgical engineers in the metal used for cylinder heads, valves, liners,

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users . . . men who know crane operation told the men who know crane design and construction what they wanted . . . and in the General 105, they've got what they asked for!

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THE **GENERAL** EXCAVATOR CO. MARION, OHIO

MOBILCRANES SUPERCRANES

bearings, pistons and piston rings. Rotative speeds will also be limited by the ability of the chemists of the oil industry to produce a satisfactory lubricating oil to withstand the higher piston and bearing speeds and possibly higher temperature. The method by which the fuel is injected into the cylinders may quite possibly be changed to facilitate higher speeds.

In order to improve the bmepp of present conventional type of engine, Mr. Burgy pointed out, it is necessary to provide some means of getting additional oxygen into the cylinder for each combustion cycle. This is accomplished by means of a low pressure, large volume, centrifugal type air compressor.

The overall thermal efficiency of the engine can only be improved by better methods of heat recovery. By means of proper heat exchangers all of the Btu contained in the engine jacket water can be recovered. A 9 pct gain in heat recovery can be made by installing water cooled exhaust manifolds on the engine.

Mr. Burgy stated that the total of these various economies can make the present diesel engine so much more efficient as to equal the performance of the gas-turbine.

Canada Ups Machinery

Ottawa

• • • Wartime Prices and Trade Board under a new order has increased prices for farm machinery imported into Canada. The new order permits sellers to add to prices as of June 15 the excess "landed cost" resulting from higher prices in the United States. Recently the OPA increased farm implement prices 10 pct at wholesale, plus an unspecified figure based on the financial need of individual manufacturers. Since prices under this order are expected to move rapidly and unevenly across the board, and since 50 pct of Canada's farm implements normally are imported from the United States, Wartime Prices and Trade Board has authorized Canadian dealers to increase their prices to meet advances across the border.

Information Free

(1) Fasteners:

The fastener shown in this booklet may be used for fastening plywood, plastic and metal products. Construction details and physical properties are given. Fastener is available in such forms as oval head stud, oval wing stud, etc. *Lion Fastener, Inc.*

(2) Rotary Cutters:

The carbide Rotary cutters described and illustrated in this pamphlet may be used on any machinable metal and have proven effective for finishing castings and for use on hard plastics. Pamphlet includes specifications and prices. *M. A. Ford Mfg. Co.*

(3) Portable Conveyor:

Description of all-purpose, light-weight portable conveyor is presented in folder. Conveyor features a power unit mounted on top, which is easily accessible, but out of the way of dust and spillage. Gasoline or electric power unit optional. Specification chart is given. *Coaltofer Conveyor Co.*

(4) Correlation Chart:

Data sheet lists every well-known stainless steel by trade name with the proper Arcos alloy electrode for welding each. AISI type numbers and analyses of the trade named stainless steels are given, as well as the chemical analysis of the corresponding Arcos electrodes. *Arcos Corp.*

(5) Drill Chip Breaker:

Pamphlet describes Continental drill chip breaker, which breaks metal chips into uniform small pieces that are easily carried up the flutes of the drill. Installation and operating instructions are also included. *Continental Tool Works.*

(6) Precision Castings:

Experimental equipment and equipment for small production runs in the precision casting field are listed in bulletin, which also gives prices. Suggested accessory lists are included. *I. Shor.*

(7) Chucking Machine:

Bulletin SC-46 gives complete information on design and construction features, work capacities, methods of operation and size specifications of the Acme-Gridley 12 in. single spindle Chuck-Matic. This unit is designed for metal-turning operations on castings, forgings and tubing parts up to 12 in. diam. *National Acme Co.*

(8) Rubber Belting:

Specifications and recommended uses for conveyor and industrial power transmission belting are given in this illustrated booklet. Data includes construction details and maintenance suggestions. *Hewitt Rubber Corp.*

(9) Adjustable Blade Reamers:

Bulletin No. R-17 describes and illustrates chucking, shell and hand reamers, having adjustable blades of high speed steel, cast alloy or carbide tipped. Complete details, including prices and dimensional data are given. A service manual gives full details about how to adjust, regrind, and reblade these adjustable reamers. *McCroskey Tool Corp.*

(10) Vibration Isolators:

Basic principles to be considered in designing for vibration control are discussed in bulletin 4-5. Specifications for Isomode compression type vibration isolators and a selector chart are included. *MB Mfg. Co., Inc.*

(11) Exhaust Fans:

Uses, construction and sizes of fans designed for dust control, fume exhaust, and collecting and conveying materials which can be carried on a current of air are presented in catalog No. 430-3. Performance tables give ratings for fans with wheels from 25 to 60-in. diam with capacities from 680 to 20,000 cfm. A special table permits a short cut method for determining fan performance, and a chart shows pressure loss in round ducts. *B. F. Sturtevant Co., Inc.*

(12) Photomicrography:

Written to aid research workers without extensive laboratory setups to take photomicrographs, this pamphlet gives complete instructions to show how even a box camera may be used for photomicrography. The text covers optical considerations, focusing, centering the camera, magnification, apparatus and setup. *Eastman Kodak Co.*

(13) Electroplating:

Technical information manual LTF-1 contains data on the use of lead and tin fluoroborate solutions for lead-tin alloy plating. Manual ZF-1 provides data on the zinc fluoroborate electrolyte in high-speed continuous and ordinary tank plating applications. *General Chemical Co.*

(14) Arcwelding Electrodes:

Information on the effect of temperature and cooling rates on deposited metal, selection of proper grade of rod and

recommended welding techniques is contained in this booklet. The use of Hardex electrodes in building up surfaces for resistance to shock and abrasion is also explained. *Metal & Thermit Corp.*

(15) Mill Drill:

Typical applications of the Micro-King mill drill for sheet metal and plastics are given in this leaflet. With this drill, holes can be drilled close together or overlapping if desired without tearing the metal or shattering the plastic. *Barco Machine Products Co.*

(16) Refractory Cement:

Qualities of Q-Chrome, a neutral chrome-base refractory cement, and its uses for laying fire brick, chrome, magnesite, and other refractory brick and tile, in furnaces where extreme temperatures and destructive slagging, chemical and abrasive actions are encountered are presented in bulletin 322-D. Its advantages and savings in refractory maintenance are covered. *Quigley Co.*

(17) Centralized Lubrication:

Bulletin 84 describes Type M lubricating systems which can be fully automatic or can be operated either manually or by a hand pump. Included is a section devoted to questions and answers concerning this system. *Trabon Engineering Corp.*

(18) Hydraulic Planer:

With complete illustrations and description, the story of the Hy-Draulic open-side planer is presented in bulletin 590. Facts about design, construction, and operation are outlined and give their advantages. Detailed specifications are given for all of the four rated sizes, each available with a choice of five different stroke lengths from 10 to 20 ft. Unit features hydraulic table drive and feed. *Rookford Machine Tool Co.*

(19) Stainless Steel Bellows:

Diagrammatic cross-section views in this pamphlet explain the use of stainless steel bellows as equalizers, compensators, expansion joints, flexible connectors and other industrial applications. *Chicago Metal Hose Corp.*

(20) Brakes:

Booklet gives complete information on company's line of SW brakes for cranes, hoists and mill machines. Sketches show dimensions and essential parts and applications of the SW magnet brake. *Victor R. Browning & Co., Inc.*

NOTICE TO READERS: Your request for this information will be forwarded promptly to the manufacturer issuing the literature. The offer is good for only two months.

7/4/46

THE IRON AGE, New York 17, N. Y.

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INFORMATION FREE (Continued)

(21) Heat Treating Equipment:

Condensed catalog C-1302 gives dimensions and operating data on condensations of material contained in the company's line of blowpipes, forges, pot furnaces, continuous heating machines, oven furnaces, automatic quenching tanks and other equipment. *American Gas Furnace Co.*

(22) Ball Bearings:

Catalog 84 gives full specifications on size, load rating, etc., on a complete line of divisible race, ball, roller and thrust bearings. Illustrations of applications of these bearings in various plants are also shown. *Split Ballbearing Corp.*

(23) Plastics Injection Press:

Flexible and simplicity of a power-operated plastics injection press are described in leaflet. Press features capacity to mold multiple parts totaling 1 oz in weight at a single injection, or to mold a single part weighing up to 1 oz. An automatic parts ejector speeds up removal of finished parts. *Van Dorn Iron Works Co.*

(24) Nonferrous Alloys:

Chemical and physical properties, with various specifications issued by government agencies and metallurgical societies on all standard and commonly used brass, bronze, and aluminum alloys and fabricated shapes, are presented in a loose-leaf handbook. Included are fundamental metallurgical and foundry data, together with selected tables of weights, standards, conversion tables, and general information of practical value. *North American Smelting Co.*

(25) Twist Drills:

Catalog No. 4D lists high speed and carbon steel twist drills. A technical section is included which contains tables and engineering information pertinent to the use of cutting tools and to the machining of metals and a general description of the company and its facilities. *Republic Drill & Tool Co.*

(26) Carbide Tool Grinder:

A new line of attachments for improved grinding of carbide tipped milling cutters, spiral reamers, counterbores and other special type carbide tools in the Hager carbide tool grinder is described in this booklet. Typical set-ups for grinding these various types of tools are illustrated. *H. F. Hager & Son.*

(27) Dust Collectors:

Individual type Dustkop dust collectors for collecting dust and lint from dry grinding, buffing, and polishing operations are described in catalog A-350. Also included is a description of a vapor collector designed to collect vapor from screw machines and other machining operations employing coolants. *Agat-Detroit Co.*

(28) Hard Surfaced Taps:

The cutting edges and entire surface of the electrolyzed taps, described in this folder, are cased with a hard alloy, evenly deposited, to give greater life to the tools. The dimensional accuracy of the tap is said to be unaffected. Folder also gives prices and sizes of various types of taps. *Electrolyzed Tap Corp.*

(29) Rolling Doors:

Bulletin 46 is a handbook on doors for all purposes. Specifications and operating details are given on steel rolling service doors, fire doors, sectional overhead doors and metal grilles. *Kinnear Mfg. Co.*

(30) Plastics:

Extensive information on the uses, properties and applications of Synthane, a laminated phenolic plastic, available in sheets, rods, tubes, fabricated parts and in parts made by molding the impregnated base materials, is given in booklet. *Synthane Corp.*

(31) Rotary Pumps:

Simplicity of design and interchangeability are featured in the new $\frac{3}{4}$, 1 $\frac{1}{2}$ and 3 gpm series K rotary pumps described in bulletin No. 10. Curves included in the bulletin can be used to determine delivery capacity and horsepower requirements over a wide range of viscosities. *George D. Roper Corp.*

(32) Drill Press Tap Heads:

Folder describes drill press tap heads, precision units designed to tap holes with an ordinary drill press. Illustrations show various models and typical installations. Complete specifications for each model and a "how to order" section are included. *R. G. Haskins Co.*

(33) Surface Pyrometers:

Illustrations and descriptions of company's roll pyrometer, extension model, mold pyrometer and needle model for surface measurements are given in booklet. Typical applications accompany the descriptions of each model. *Cambridge Instrument Co., Inc.*

(34) Grinding Wheels:

Pocket-size reference book presents facts and figures on grinding wheels. It tells how to select the proper grades and types of wheels for various jobs, how to correct faults, causes of unsatisfactory finishes and other important factual data. *Safety Grinding Wheel & Machine Co.*

(35) Electric Motors:

The new polyphase Delco general purpose ball bearing motor, described in this bulletin, has a complete top half enclosure which prevents dripping liquids and falling particles from entering the interior of the motor and causing dam-

age. It has been designed in NEMA frame sizes 203 through 365 at present horsepower ratings for open motors. *Delco Products Div., General Motors Corp.*

(36) Precision Gears:

Specifications on the company's line of bevel gears, spur gears, flywheel starter gears and spline shafts are given in this booklet. Also described are production methods used at the plant and engineering service offered. *Automotive Gear Works, Inc.*

(37) Storage Racks:

A wide variety of sturdily constructed angle iron racks for storing bulky automotive parts, as mufflers, tail pipes and moldings or fenders are described, illustrated and priced in booklet. Racks are fabricated to permit a series of racks to be bolted together to form one unit. *Warren Steel Specialties Corp.*

(38) Bell Type Furnaces:

The method of using the rectangular bell type furnace fired with radiant tubes for malleableizing iron castings is described in this folder. In this process the castings are used to create their own protective atmosphere to prevent scaling during annealing. *Lee Wilson Engineering Co.*

(39) Set-Up Blocks:

Folder illustrates and describes parallel set-up blocks used in conjunction with jig borer and jig grinder. The many adjustments possible with this device are pointed out. *Moore Special Tool Co.*

(40) Safety Tools:

Over 500 safety tools made of non-sparking Ampco metal and Ampco beryllium copper are listed in Catalog 117. Tools are recommended for use in the presence of explosive liquids, fumes, gases and dust to prevent fires and explosions which may be caused by sparks from steel tools. *Ampco Metal, Inc.*

(41) Power Plant Equipment:

Equipment for power plants and industrial processes offered are described in bulletin Q-12. Illustrations cover such units as steam turbines, motors, generators, turbochargers, steam jet ejectors and centrifugal blowers. *EHott Co.*

(42) Electrical Insulator:

Booklet lists properties, available types, molding and fabricating techniques on Mycalex, a stone like product composed of mica and a special glass for use as an electrical insulator. Featured is a properties chart of six grades of Mycalex of both the compression and injection molded types. *General Electric Co.*

THE IRON AGE, New York 17, N. Y.

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THE IRON AGE, July 4, 1946—149

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Named Technical Advisor

Cincinnati

... Appointment of Al. Levinson, president of the Steelcraft Mfg. Co., Cincinnati, as technical adviser to the Wyatt Housing Program on prefabricated steel housing, has been announced by the National Housing Agency.



Mr. Levinson

The Steelcraft Manufacturing Co. was engaged in war production of prefabricated steel buildings. The company also built steel transit sheds and fabricated steel and aluminum for the aviation industry. It is producing about 200 prefabricated steel and aluminum houses a month at the present time.

Mr. Levinson is a native of Charlevoix, Mich. and graduated from the University of Michigan in 1910 as a civil engineer. He began his industrial experience with the Truscon Steel Co. as engineer and later was district sales manager in the Cincinnati district. He organized the Steelcraft Mfg. Co. in Cincinnati in 1940 and developed and produced their first prefabricated steel buildings in that year.

Otis Elevator Reports Escalator Orders Up

Chicago

... It was reported here that Otis Elevator Co. has booked more than \$20 million in escalator orders which represent approximately two years' production. Prior to the war, the company's largest output of escalators was 100 units per yr. Since then facilities have been expanded enough to permit production of 300 units a yr. The company now has on its books orders for 600 units, the production of which will be based on the present availability of materials and labor. The new units, it was said, will make extensive use of flat rolled stainless steel, the delivery of which will probably be much better than the delivery of the castings, chain and other items needed for production.



TITANIUM VITREOUS ENAMELING IRON

Recent production experience with Titanium enameling iron demonstrates... more clearly than ever before... the unique advantages of this new advance in the enameling industry.

With Titanium enameling iron—the cover coat, in white or color, is satisfactorily applied directly to the base metal. Ground coats are usually unnecessary when proper shop conditions are observed. As a result,

production is doubled, often tripled—capacity boosted—and substantial savings effected.

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sultant carbonless iron, having no yield point, is especially satisfactory for deep drawing.

Both manufacturers of enamelware and steel find these and other features of this new Titanium enameling iron worth investigating. It's easy to get the facts. Our field engineers and research organization will welcome the opportunity to cooperate. Write today. There's no obligation, of course.

THE Merit Mark OF METAL.



Pending patent applications on the new enameling process and products made thereby are owned jointly by Inland Steel Company and The Titanium Alloy Manufacturing Company under Trust Agreement.

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In designing new products . . . new plant equipment . . . or in modernizing your present plant, it will pay you to consider the generous use of Stainless Steel. Now more than ever you can use it freely because IngAclad Stainless-Clad Steel, at much lower cost, gives all the stainless service you will ever need . . . on the side that is used.

Ingersoll Steel Division of Borg-Warner Corporation produces both IngAclad and Ingersoll Solid Stainless Steel. Our engineers are, therefore, in a position to advise you without prejudice. This helpful service is yours without obligation.

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- () Free Manual of Welding and Fabricating Procedures for IngAclad

NEWS OF INDUSTRY

Britain Builds Factories For Rent; Depressed Areas Are to Benefit

London

••• In Great Britain 1453 new factories have been approved for construction since the war ended, at an estimated cost of \$248,000,000. Of these, 585 are in the development areas, which were formerly scheduled as depressed industrial areas, and 262 are under construction.

It is estimated that the 585 factories, costing about \$124,000,000, will provide additional employment for 135,000 workers. Roughly half this expenditure will be incurred directly by the British Government in building factories to let. The other factories in the development area will be built by private enterprise.

In accordance with the policy of making these areas less dependent on the basic industries, the new factories will provide employment in a whole range of light industries in most of which women can find work as well as men. These industries include the manufacture of clothing, hosiery, glass, coal mining machinery, plastics, light engineering products, sheet metal, furniture, radio and electrical equipment, and toys. The bulk of the factories so far approved in the development areas are 192 in South Wales, 184 in the North-Eastern area, and 172 in Scotland.

The 868 factories approved for construction outside the development areas will also cost about \$124,000,000 and will be financed and provided by private enterprise. It is estimated that they will find additional employment for 53,000 men and 30,000 women. Only 98 of these factories will be in the London and South-Eastern area, as it is the government's policy to prevent as far as possible any substantial expansion of industry in London and its vicinity and to attract industrialists to other parts of the country, particularly to the development areas. Of the factories approved outside the development areas, 173 are in the North-Western area, 153 in the Midlands, 131 in Yorkshire, 91 in the North Midlands, and 54 in Scotland.

Outlook for Electric Furnace Construction Reported Indefinite

Pittsburgh

• • • **Opinions concerning** electric furnace construction business for the immediate future are divergent, some industry members expecting that there is a rather substantial potential and others feeling that there is too much government-owned capacity that still must be sold before new construction can be expected.

Apparently, government-owned units have been moving through WAA and industrial channels in considerable volume. These furnaces, of quite modern design, have the advantage of better price over new construction, especially since prices now are high compared to those in 1938 and 1939. Further, much of the WAA disposed equipment is on a bid basis which does not necessarily represent the entire cost price of the equipment.

In addition to price, there is another phase of the new construction picture that is disheartening both to builders and prospective buyers. One builder pointed out that auxiliary electrical equipment and controls are far behind in delivery, and furnace manufacturers are getting a 12-month delivery promise on such equipment. Even this extended delivery is quoted with a "tongue in cheek" attitude. Producers of electrical equipment for industrial purposes are more pessimistic, one company stating that orders received now would go on the drawing boards next January.

Apparently one of the greatest potentials in expanded electric furnace use at present is the narrowing of the margin of differential between the cost of electric furnace produced steel and that produced in the openhearth. Several companies have found that on specific grades of steel, such as certain sulphur steels and rimmed steels, that actually electric furnace steel costs less than openhearth steel. The \$10 differential between electric furnace steel and openhearth steel is a tough nut to crack from the sales standpoint, but observers state it is one of the greatest stumbling blocks in the development of greater use of the electric furnace product. Apparently wire and wire fencing made of electric furnace steel is

ARMSTRONG

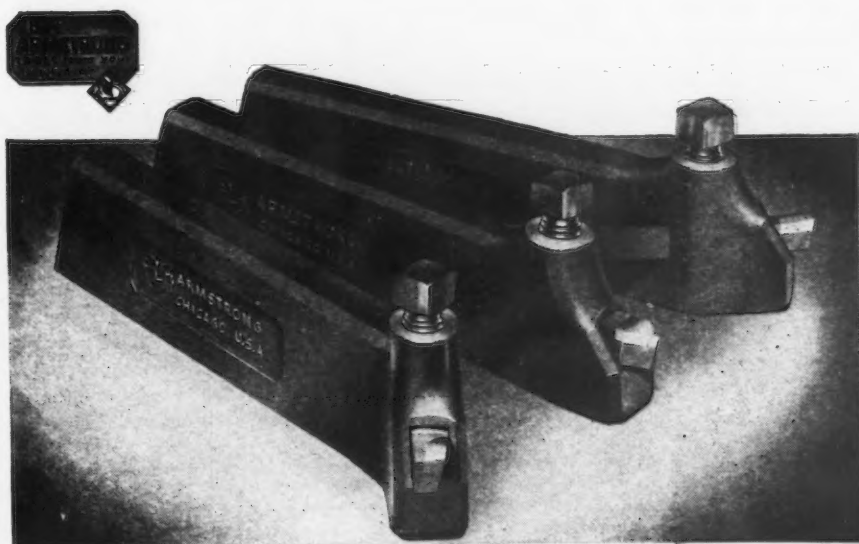
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TOOL HOLDERS



ARMSTRONG Carbide TOOL HOLDERS have been specially designed and engineered for use with Carbide-tipped tool bits, and embody the special characteristics essential for the efficient use of carbide-tipped cutters, namely: great strength, extreme rigidity and close-up support for the cutting edge. The ARMSTRONG Carbide TOOL HOLDERS System makes the use of carbide tools practical for everyday operations in tool rooms, maintenance departments and machine shops. Each takes interchangeable carbide-tipped tool bits ground to different cutter shapes . . . each tipped cutter can be used in a "Straight Right Hand Off-Set" or "Left Hand Off-Set Tool Holders." Hence a small investment in ARMSTRONG Carbide TOOL HOLDERS and carbide-tipped cutter bits can turn those hard-to-do machining operations into "just another routine job," changing losses into profits.

ARMSTRONG Carbide TOOL HOLDERS and Armide or other carbide-tipped cutter-bits are now available at leading industrial supply houses.



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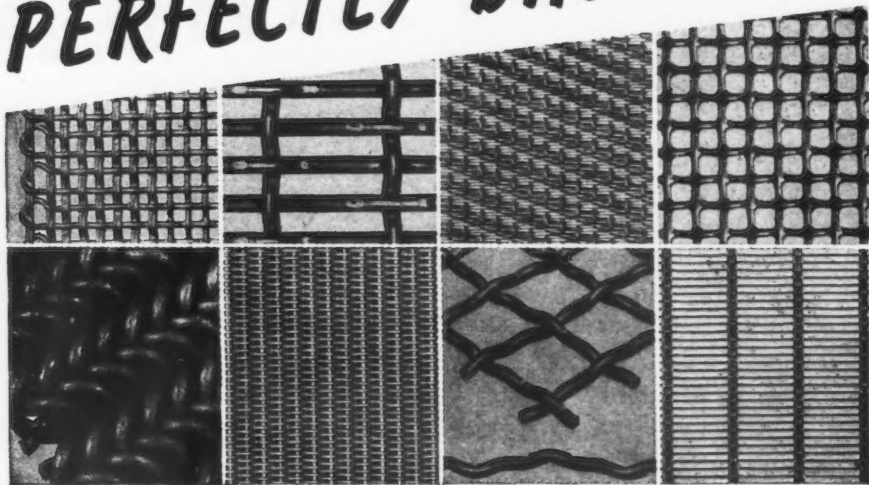
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Such alloys are woven by "Buffalo Wire." They permit you to go to a mesh of lighter gauge, and thereby achieve the perfect balance of productivity and screen life. The relatively higher cost of a durable alloy is more than offset by greater separating speed and less frequent wire cloth replacements.



NEW FOLDER 596

Tells how "Buffalo" Stainless Steel Wire Cloth cuts costs and improves performance in thousands of installations. Valuable data on corrosion-resistance. Write for your copy.

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NEWS OF INDUSTRY

being sold on the regular openhearth base, and it is believed that this practice will expand.

With a capacity for electric furnace steel in the neighborhood of 5.5 million tons a year, production will be about 3.5 to 4 million tons a year for at least the next 2 or 3 yr. No large furnace installations are scheduled to go in, but apparently there is consideration being given to augmenting openhearth shops with large single electric units. Whether or not this consideration will reach the point of actually installing such capacity is difficult to say, but decreasing costs of electric steel production certainly will be a weighty factor in the final decision of steel producers.

Eight Major Plants Up For Disposal by WAA

Pittsburgh

••• Eight industrial units in Pennsylvania, Ohio and West Virginia, consisting of a steel foundry, two steel forging facilities, two steel heat-treating plants, a carbon-electrodex factory, a beryllium processing installation and a steam engine parts manufacturing plant, have been offered for sale or lease by the War Assets Administration.

The installations, listed by names of operating lessees, are: Continental Foundry & Machine Co., steel foundry, Wheeling, W. Va.; Pittsburgh Forgings Co. plant, Corapolis, Pa.; Republic Steel Corp. plant, Canton, Ohio; Crucible Steel Co. of America, bar-drawing mill, Midland, Pa.; Superior Steel Products Co. steel annealing plant, Monaca, Pa.; Speer Carbon Co. plant, Punxsutawny, Pa.; Brush Beryllium Co. plant, Lorain, Ohio; General Machinery Corp. plant, Hamilton, Ohio.

The Continental foundry, which has a reported cost to the government of \$1,275,070.12, was designed to produce 13,500 net tons per year of steel castings. The plant occupies 1.15 acres and consists of two buildings containing 48,600 sq ft of floor space. The main structure measures 310 x 95 ft and contains production equipment, annealing furnaces, four heavy duty cranes, and machine and portable tools. Utilities are supplied by local companies, with rail trans-

port being available via the Wheeling Railroad.

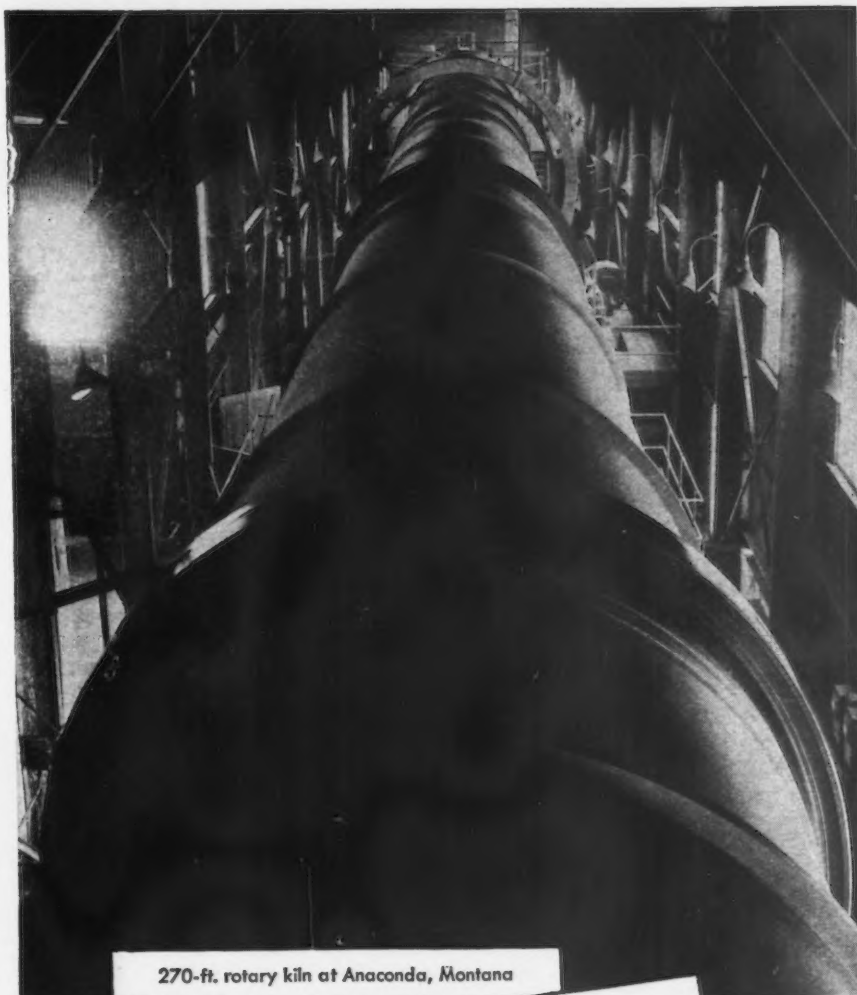
The Pittsburgh Forgings Co. plant, which cost the government of \$262,068, consists of 1400 sq ft of floor space with some 16 items of machine tools installed. Also on the site is a stoker fired boiler with accessory handling equipment, a welding and rotoblast machine and a Pangborn dust collector.

The Republic Steel Corp. plant was designed as a steel forging and heat-treating plant with a rated capacity of 31,000 tons yearly. It has a reported cost to the government of \$3,681,382. Twelve buildings contain over 168,000 sq ft of floor space, 153,000 of which is contained in the factory building. Production equipment includes 42 various types of furnaces, presses, saws, grinders, etc. All necessary utilities are installed, and the Pennsylvania Railroad has three sidings on the 17.2-acre site.

The Crucible Steel Co. mill has a yearly capacity of 48,000 tons of heat treated and cold drawn alloy steel bars. Consisting of one large building with approximately 232,000 sq ft of floor space, the plant is situated on a 7-acre site. It has a reported cost to the government of \$2,944,043. Production and machinery installations include furnaces, machine tools, laboratory and testing devices, office furniture and fixtures and eight heavy duty overhead cranes. The Pennsylvania Railroad has a siding on the site, and all necessary utilities are commercially supplied.

The Superior Steel Products Co. plant, with a reported cost to the government of \$280,552, has a yearly capacity of 30,000 tons. The plant contains 24,000 sq ft of floor space. Annealing furnaces, draw benches, bar pointers, laboratory and testing equipment are included in the offer. The Pittsburgh and Lake Erie Railroad has a spur line extending into the building. Local public utility companies serve the plant.

The Speer Carbon Co. plant was designed to produce 60 million carbon electrodes a month. Consisting of three buildings on a 10½-acre site, the installation has more than 64,000 sq ft of floor space. All necessary production equipment is installed as are all utilities. The Baltimore & Ohio Railroad serves the plant. Reported cost to the



270-ft. rotary kiln at Anaconda, Montana

Anaconda MANGANESE NODULES

AVERAGE ANALYSIS

Mn	60%
SiO ₂	8%
Al ₂ O ₃	0.76%
Fe	3.1%
P	0.06%

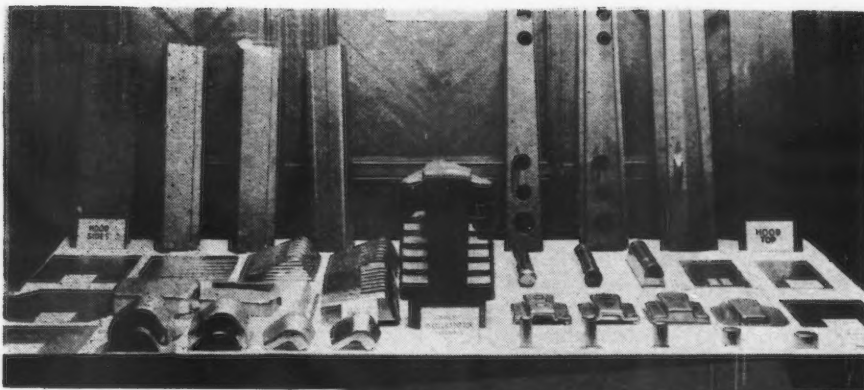
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NEWS OF INDUSTRY

government of the plant is \$1,022,631.

The Brush Beryllium Co. plant consists of three buildings containing 56,000 sq ft of floor space on a 3/4-acre land tract. It was designed to augment the lessee's production of beryllium salts and oxide powder. The plant has a reported cost of \$922,460. More than 800 items of process equipment are located in the plant. Local utility companies service the plant as does the Baltimore and Ohio Railroad which maintains a siding into the plant area.

The General Machinery Corp. plant, with a reported cost to the government of \$1,139,730, was designed to produce parts for steam engines. A single structure containing 35,800 sq ft of manufacturing area, has been erected on the 1 1/3-acre site. It houses machine and portable tools, heavy duty cranes, hoists and trolleys. All utilities are available as are sidings of the Baltimore & Ohio and Pennsylvania Railroads.

WAA Sells Two War Plants in New York

New York

••• An aircraft hydraulic control equipment plant at Kingston, N. Y., has been sold to its wartime lessee, Electrol, Inc., for \$428,763.40, the War Assets Administration states. Included in the sale were two manufacturing buildings, office, and personnel buildings. The new owner expects to continue production of aircraft hydraulic equipment and other hydraulic apparatus, with a maximum additional employment of 500 persons.

The seaplane float manufacturing installation at College Point, Long Island, N. Y., has been purchased by the wartime lessee, Edo Aircraft Corp., for \$350,000. The owner will continue to produce floats for Navy and civilian use.

The Houdry Process Corp. has leased for one year a synthetic cracking catalyst plant at Paulsboro, N. J., which it operated during the war. The Houdry Corp. plans to engage in the manufacture of the catalyst for a trial period of one year to see if production is economically feasible. Minimum rental for this experimental period has been set at \$35,000.

Gallup Polls

(CONTINUED FROM PAGE 113)

by the British Institute as follows:

"The Communist Party has applied for affiliation with the Labor Party. Do you think that the Labor Party should or should not agree?"

The vote:

	Pct
Should	16
Should not	54
No opinion	30

Last week officials of the Labor Party announced that the Communist request for affiliation had been turned down.

19 Million Tons of Steel Lost in 10-Month Period

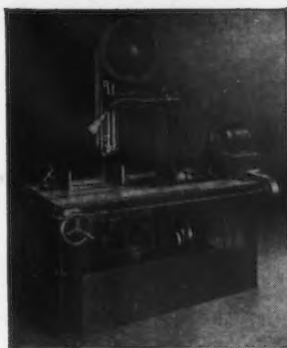
... In the ten months from August 1945 through May 1946, production of ingots and steel for castings was 22,036,000 tons lower than output over the same period of 1944-1945, according to the American Iron & Steel Institute.

Presumably, better operating conditions would have enabled at least 19 million tons of that total to have been made. The institute stated that the 19 million tons would have supplied the steel for 1 million small dwellings plus the steel for 1,700,000 automobiles, plus all the bale ties made for farmers over the last nine years, plus 50 million 1-qt tin cans, plus a washing machine and a stove for every one of the 1,000,000 homes mentioned above—and still there would remain 7,500,000 tons of steel for other purposes.

Kropp Leases Forge Plant

Chicago

... The aircraft forging plant, leased and operated during the war by Kropp Forge Co., Chicago, has been leased to the Kropp company for 5 yr at a minimum rental of \$50,000 a year. The lease agreement also carries an option to purchase at any time during the first 4 yr of the proposed lease. The plant will be converted from the production of aircraft forgings to the production of general commercial forgings at a cost of over \$500,000.



**No Other Saw
Can Do As Much!**

MARVEL Universal Band Saw, 18" x 18" capacity, will cut-off, slot, trim, mitre, notch, piece, structural sections, moldings, tubing, large standard shapes with speed, ease, and convenience. Few shops working with metal can afford to be without this most versatile of all saws.

MARVELSAWS

Mitre cutting is simple and accurate with the MARVEL Series 8 Band Saw. No change in position of work. Simply set the saw column at any required angle up to 45° either right or left with any other band saw. There is no other machine like the No. 8 MARVEL.

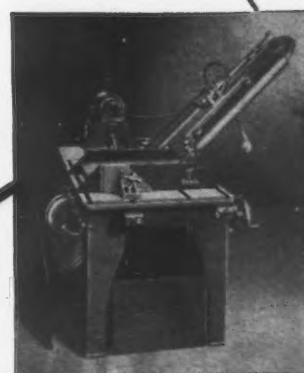
Complete Range of Metal Sawing Machines

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price and recommendation for the saw to fill your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course)

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*No other
saw can
do as
much!*



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THE BEST
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IN IRON

10 POUNDS

10 POUNDS . . . for easier handling, more accurate control of the charge, finer grain structure of the iron. That's the story of the new HannaTen ingot, available in all grades of Hanna iron. Take advantage of this important development in "better iron for better castings" . . . from Hanna.

GRADES:
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MALLEABLE
FERRO-SILICON

BRANDS:
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DETROIT

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MARKET—Jacksonville's non-competitive distribution area embraces a population of 3,420,770 with an effective buying income of \$2,626,291,000. The local wholesale trade area includes a population of 1,194,891 with an effective buying income of \$1,045,792,000.

A specific industrial and market survey will be prepared at your request. Write us and outline your needs. Correspondence will be strictly confidential.

Dept. A., Industrial Division,
Chamber of Commerce.



NEWS OF INDUSTRY

London Economist

(CONTINUED FROM PAGE 117)

known. But it did make clear that there is no present Russian intention of abandoning the veto right in atomic matters.

In such an important matter as this the only relevant question to ask about any plan is not whether this or that government will like it, but whether it would work. And unfortunately, if the Russian plan is what it appears to be, it certainly would not work. A promise not to abuse the tremendous powers of potential aggression contained in atomic energy, without any power of enforcement against the Great Powers whose breach of it is most to be feared, would be a mere atomic Kellogg Pact. It is strange that the realist Russians should put forward such a sentimental proposal. The explanation is probably that they are frightened of the atomic bomb (having no prospect of possessing any of their own for some time to come) and feel the necessity to make some proposal, but not so strongly that they are prepared to abandon the whole nationalist bias of their foreign policy.

In any case, the reason for which the Russian proposal is unacceptable should be made quite clear. It is not simply that nations cannot be trusted to keep their words. Perhaps, in this instance, they would. The trouble is that the risks of atomic warfare are so enormous that no national government can afford not to make its own atomic preparations unless it is absolutely certain—or at least as confident as human ingenuity can make it—that other nations are keeping their promises. That is why there can be no veto in atomic matters. It is not the probability of treachery but its mere possibility that would wreck the system.

The Russians should not be taken as having turned down the Baruch proposals. Perhaps, when it is borne in upon them that they can have either international control on the Baruch terms or a purely nationalist race to make atomic bombs, which they are unlikely to win—perhaps then they will change their minds. They should certainly be given every encouragement to do so.

People in the West, for example, would do well to recognize, in their



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discussion of the problem, that, seen from Moscow, it is the Americans and the British, not the Russians, who are the potential aggressors — with atomic bombs already in their possession. Russian reluctance to admit inspectors and to abandon the veto does not need to be ascribed to sinister motives; it emerges from the whole nature of the Soviet system. If they are to accept the Baruch proposals, the Russians have some very painful decisions to take, and every attempt should be made to create a favorable atmosphere for the swallowing of these bitter pills.

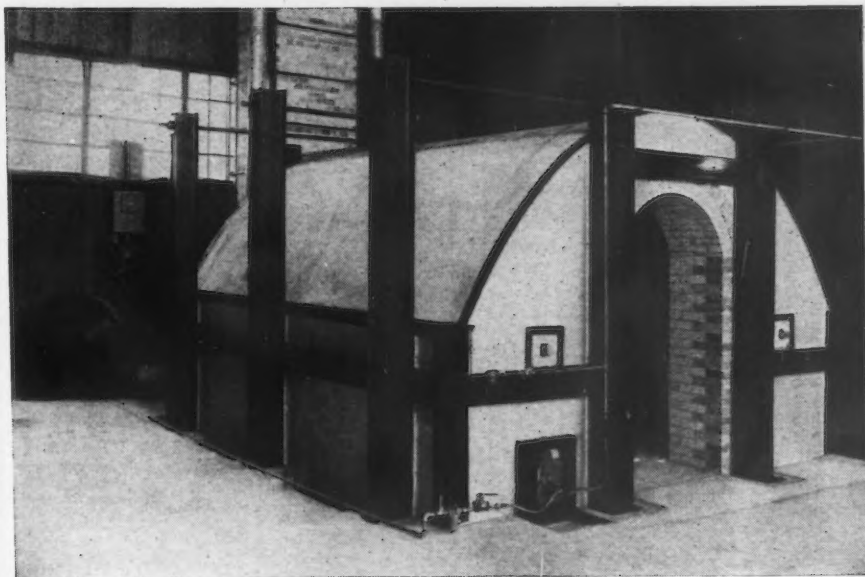
But atmospheric conditions can do nothing to alter the granite outline of the essential problem, which is exactly the same whichever power is suspected or feared. More than with any other question the world has ever had to handle, this is a matter of all or nothing. There is a certain minimum of safeguards, and unless it is attained, any scheme of purported international control is a snare and a delusion. For if there is one thing worse than for all the powers to have atomic bombs, it would be for the aggressively-minded powers alone to have them.

A system of atomic control which, however much it was dressed up as "a promising first step" or "an attempt to build up to a solution," in fact controlled the innocent while leaving the would-be-guilty free, would be a disaster without limit. It would make atomic war and the destruction of civilization quite certain. Rather than that, it would be better to have atomic bombs in everybody's hands, so that there would be at least the threat of retaliation to prevent, or postpone, the crash—a poor reliance, it is true, but better than the certainty of disaster.

Heads Accountants Group New York

••• James L. Brownlee, general procedure supervisor of Tennessee Coal, Iron & R. R. Co., Birmingham, was elected national director of the National Assn. of Cost Accountants. Election of national officers of the association was held during the 27th annual International Cost Conference held at The Waldorf-Astoria Hotel, New York, June 17-19. There were 3000 in attendance at the technical sessions, the largest turnout in Ass'n history.

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NEWS OF INDUSTRY

CPA Reports Imports Of Lead During July Will Reach 8700 Tons

Washington

... CPA told a meeting of the Primary Lead Distributors Industry Advisory Committee that July lead imports will be approximately 8700 tons. June imports are expected to total about 6000 tons.

However, lead imports at the estimated July rate, plus domestic production, is equal to about 50 pct of domestic demand, CPA said. The committee was also told that 6000 tons of lead will be "borrowed" from the Metals Reserve Corp. to make deliveries early in July which will be replaced from imports received later that month.

Demands for 70,000 tons of lead in July were presented by lead consumers to the committee. CPA officials said, however, that some of these demands were excessive and were accordingly reduced. Despite the drop in domestic production because of strikes, a fair amount of domestic lead is reaching consumers, CPA said. Domestic production is currently estimated at a 350,000 ton annual rate compared with the 387,000 tons produced in 1945.

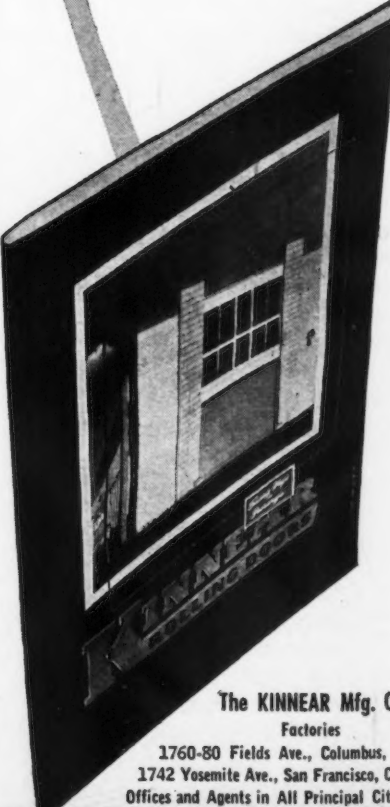
Aside from the temporary effect on government stocks occasioned by the 6000 ton "borrowing," no further inroads will be allowed on government lead holdings, CPA said. Current federal stocks are estimated at around 38,000 tons compared with around 100,000 tons at the beginning of 1946.

Approximately 100 requests were presented at the meeting for lead expected to be imported in July, with demand totaling more than 70,000 tons. These requests were "across the board" representing battery, paint and other manufacturers who are large lead users.

All requests, however, were carefully reviewed from the point of view of consumers' stock on hand and contracts with domestic producers and other relevant factors, CPA said.

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Belgium Machine Tool Industry Estimated Operating at 100 Pct

Brussels

• • • An expansion is taking place in the Belgian machine tool industry today which has already increased the national output from 10,000 units per year to 13,000, and which will go to a higher level in the future. In contrast to most of the remainder of European heavy industry which is operating at 2 to 50 or 60 pct of capacity, machine tool experts here estimate that their industry at present is operating at almost 100 pct of the theoretical maximum.

Belgian estimates on exports, which sometimes tend to be conservative, indicate that 80 pct of this output is going to the export trade. The industry is active in every known overseas market for tools except the United States, where a 30 pct duty acts as an effective if locally unpopular barrier to Belgian enthusiasm. According to Belgian trade sources, no less than 2000 tools could have been sold in America this year but for the duty, despite the fact that Belgian prices are 2.4 times as great as prewar.

Most unusual factor in the tool trade here is the wide range of machinery that is available for delivery in 1 to 3 months. There are some items that are scarce enough elsewhere that are to be found in stock in Belgian warehouses, viz standard size grinders. Among the items being offered for delivery up to 12 weeks are lathes, horizontal borers and certain types of presses.

The Belgian industry had its beginnings in the middle of the last century, and is made up today of 12 principal companies and about 20 smaller ones, with a total of about 5000 employees in the whole industry just before the war. The impact of the first world war and the depression forced close cooperation down the throats of the Belgian industry. German exports of tools to Belgium were restarted as early as 1921.

A broad program of reorganization and rationalization carried the industry up to 1939. As a result of this program a system of specialization was virtually completed, whereby each firm more or less voluntarily narrowed its line of products. Thus, even in a comparatively small

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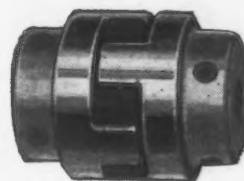
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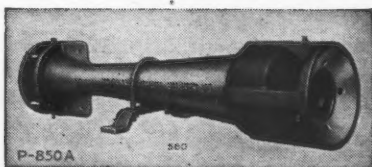


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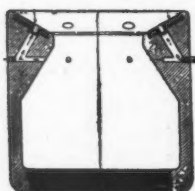
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NEWS OF INDUSTRY

machine tool industry it became possible to assemble machinery in fair sized batches, and achieve economies of larger scale production.

Belgian trade sources are reluctant to discuss the full plans for the expansion of the industry at present, and it is certain that no final decisions have been made as yet. Until the Fates in the form of the Allied Control Council for Germany in Berlin dictate more clearly that country's future place in Western Europe, Belgians cannot hope to accurately assess even the broadest outlines of their potential market, in machine tool or other industrial lines.

There is strong feeling that the domestic market will be on the upgrade for many years, as the average age of the machines in use in Belgian home industries was estimated at about 18 yr in 1939 and will be appreciably higher today. The most natural markets for Belgian exports are France and the Netherlands, and these possibilities are being exploited to the fullest. The impending establishment of a customs union between Belgium and Netherlands will tend to make for closer industrial contacts and co-operation, so that all Belgian manufactured goods should play a dominant role in Netherlands markets in the future.

In the prewar period Belgian industrial organizations imported almost as many tools as the machine tool firms exported so there was an approximate balance.

New Officers Elected

Milwaukee

• • • At a meeting of the Milwaukee Assn. of Purchasing Agents the following officers were elected to serve during the year 1946-47:

President, Edward L. Block, Unit Drop Forge, Div. of Fuller Mfg. Co.; vice-president, Frederic G. Syburg, Chain Belt Co.; secretary, Clifford M. Dawley, Ampco Metal Inc.; treasurer, Howell Pritchard, Kearney & Trecker Corp.; national director, Lyall C. Stilp, Kimberly-Clark Corp., Neenah; director, James Hamilton, The Dumore Co., Racine; director, Norman Schowalter, West Bend Aluminum Co., West Bend; director, Herbert Frank, Sterling Wheelbarrow Co.; director, Richard Holmes, Pressed Steel Tank Co.

Scrap Advisory Group Asks Surplus Scrap Be Sold at Sealed Bids

Washington

•••WAA has announced the formation of a Scrap Iron & Metal Dealers Advisory Committee.

At the first meeting with WAA officials, the Committee unanimously recommended that all surplus scrap be offered for sale at sealed bids to all levels of trade. Under present WAA regulations, surplus copper scrap and copper base alloy scrap are being withheld from strategic stockpiles to meet civilian deficiencies at mill level and are being shipped in accordance with CPA Directive No. 19 under PR 13.

The Committee also recommended that in the interest of accelerating the movement to consumers of scrap containing strategic metals as well as increasing the financial recovery to the government, owning agencies be permitted to include this type in their regular scrap sales, in spite of the fact that this strategic metal may not be sold under consumer ceiling prices.

The meeting was conducted by William H. Kelley, Director, Metal Sales Division, WAA.

Members of the Advisory Committee are: Robert A. Clymer, Luria Bros. & Co., Inc., Pittsburgh; Bernard Fabrikant, vice-president, Dulton Steel Products, New York; J. Feldman, Commercial Metals Co., Ltd., Dallas, Tex.; Philip W. Frieder, president, The Philip W. Frieder Co., Cleveland; Harry S. Goldstein, L. Goldstein's Sons, Inc., Philadelphia; Emanuel Hettleman, K. Hettleman & Sons, Baltimore; Milton Levenson, Miles Metal Corp., New York; S. A. Levine, Peoples Iron & Metal Co., Chicago; Henry Lipkowitz, The Atlas Co., Cleveland; Herman D. Moskowitz, Schiavone-Bonomo Corp., Jersey City, N. J.; Joseph Paper, Paper, Calmenson & Co., St. Paul; Phillip Scheibner, Associated Iron & Metal Co., Oakland, Calif.; Rake Temerson, Charles Temerson & Sons, Tuscaloosa, Ala.; Joseph M. Viener, Hyman Viener Sons, Washington, D. C.; Morris S. Watt, Eureka Iron & Metal Co., Los Angeles; M. W. Zack, M. W. Zack Metal Co., Detroit.

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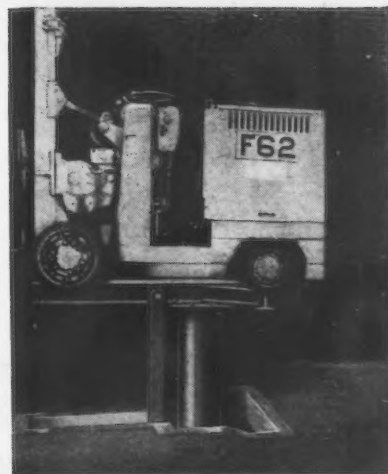
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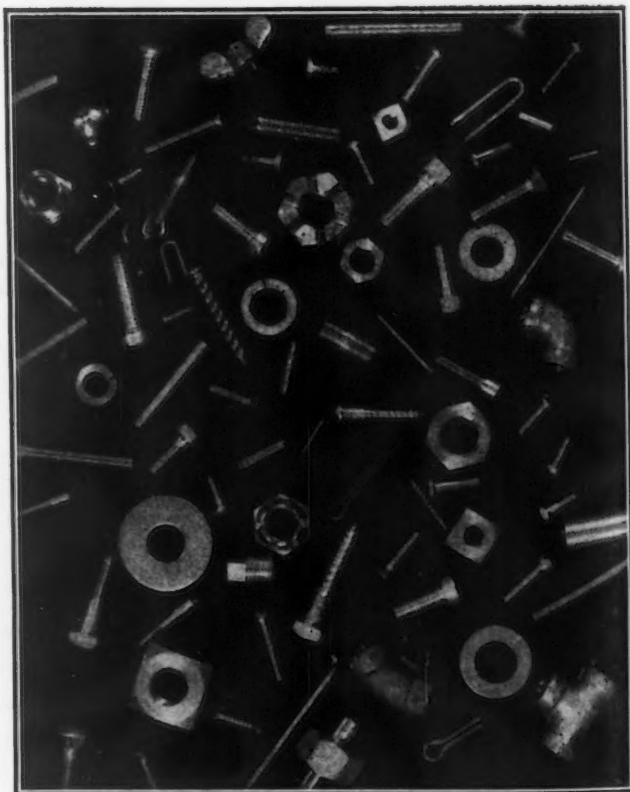
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